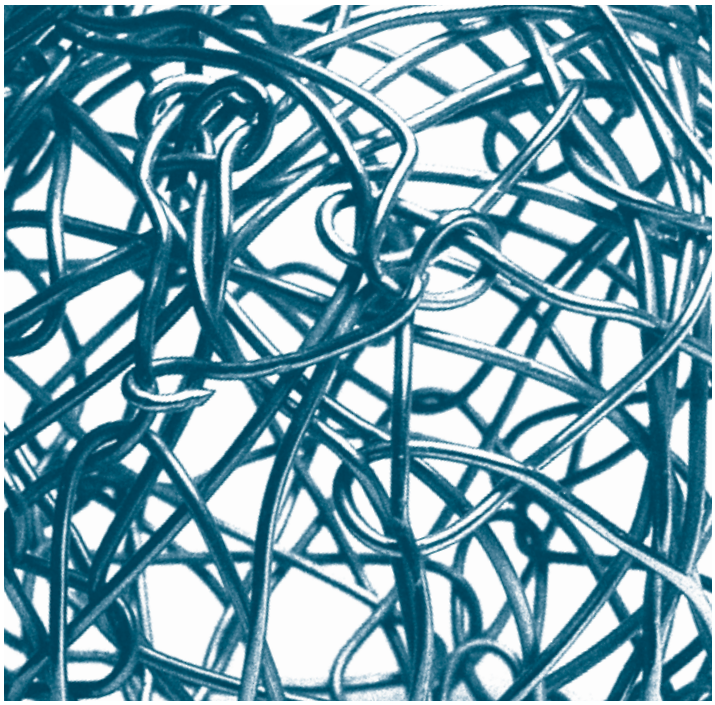
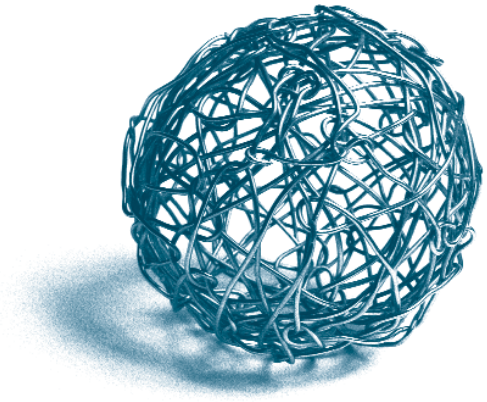


SAN DIEGO'S DIGITAL DIVIDE *REVISITED*

Approaching Digital Inclusion - but Disparities Persist



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www.sdrta.org

About the RTA

The San Diego Regional Technology Alliance (RTA) is a private 501(c)3 corporation, supported by private sector partnerships, grants and program revenues. The organization was established in 1993 by the State Legislature to administer tech commercialization grant funds and assist emerging technology and biotech companies. The RTA's mission has evolved over the decade in support of sustainable technology growth. Currently, the RTA provides direct business assistance to entrepreneurs and high-tech and biotech companies, programs to bridge the digital divide, and research and education to help shape public policy and forge effective collaborations.

Highlights of the RTA's Regional Impact

- 2,500 emerging growth companies worked with the RTA in some capacity in 2004.
- Over 900 companies are represented at RTA's educational events – workshops and seminars each year.
- RTA's email newsletter reaches over 9,600 local tech companies, community leaders and key decision makers weekly.
- RTA's website – featuring research, downloadable resources and information about community and professional services – attracts an average of 15,800 unique visitors per month.
- The RTA has produced 12 high tech, life sciences and economic development-related research publications.
- RTA's Community Technology Services program has helped over 30 community centers in the region's underserved neighborhoods gain technology access and plan for sustainability.

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This study is a product of the San Diego Regional Technology Alliance (RTA). The RTA is dedicated to providing assistance to San Diego's technology community through entrepreneurship programs and services, services to help community technology centers increase technology inclusion, and research to promote sustainable tech-based economic growth.

The RTA would especially like to acknowledge the Waitt Family Foundation for funding this study, and for their collaborative leadership in helping the San Diego community address critical technology issues.

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Finally, the RTA thanks Anne Neville of CTCNet for advising on this study.

Foreword

As Chair of the San Diego Commission on Science and Technology I'm delighted to see the results of a long needed study on the status of digital inclusion in our region. As recorded in its mission statement, one of the core beliefs of the Commission is that:

> *All San Diego citizens must be able to use technology, particularly digital resources for both economic opportunity and quality of life, including education, work, government, interfaces, culture and entertainment.*

Concerned with meeting this portion of its mission, the Commission convened the Digital Inclusion Working Group, a collection of private and public organizations with a common interest in addressing San Diego's digital inclusion problem. The consensus of the Working Group members was that besides establishing strong communication with one another and leverage by working together, the Working Group needed a current understanding of the depth and breadth of digital inclusion issues in San Diego as well as their potential impact on our local economy. This study is the first part of fulfilling that need. In addition, the Commission has funded a follow-on study to answer the second question, the overall impact of leaving some of our citizens without access to or knowledge of computers.

From my personal experience as an engineer, technology entrepreneur, industry association leader, and venture capitalist, it is blatantly clear to me that leaving any part of our population behind with respect to computer access and literacy is a death sentence in terms of their future employability. So, this first step of characterization and quantification of this problem is critical for our community and the health of the city.

This study reveals good news in that it has found that overall computer literacy has increased in the San Diego region over the last three years. Home computer ownership and Internet access have increased countywide by significant percentages. Specifically, general computer and Internet literacy appears to be highest among San Diego City and North Coastal residents, African-Americans, 18 to 44 year olds, and people with annual household incomes of $35,000 or higher. However, public access is still necessary for some San Diegans. People with annual household incomes under $20,000 use public access facilities at more than twice the rate of the general population.

In addition, some segments of the population have made no progress in gaining access to the electronic world. In particular, South County residents and Latinos tend to be at the biggest disadvantage in this respect. As measured in both 2001 and 2004, South County residents had the lowest rate of computer ownership, below the average rate for all sub-regions, even though residents in this area desire more computer usage than they presently have. Cost remains a constant factor in discouraging home ownership of computers. And although Latinos are 28% of San Diego's general population, they are 40% of the "unwired" population.

The results of this study are very encouraging in revealing that great strides in equalizing access to computers have been made in just a few years. It also points out the areas remaining that are ripe for attention and where focused effort can gain great results.

Martha G. Dennis, Ph.D.
Chair, San Diego Commission on Science and Technology

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Executive Summary

In approaching the issues surrounding the digital divide, the RTA and its partners have attempted to build awareness, so that the region can better understand the dynamics, characteristics, and dimensions of this complex social problem.

The RTA began this process in 2001 with the release of its study, *Mapping a Future for Digital Connections, a Study of the Digital Divide in San Diego County.* That report was the first of its kind in the region, and was considered by many to be a significant catalyst in regional efforts to bridge what was at that time a serious chasm. The purpose of this study is to take another snapshot of the region and determine whether the gap is being closed. We have re-examined some key issues, and have considered some new variables as well.

Our findings essentially indicate that there is good news as well as bad news. The good news- there have been many positive changes throughout the region, and for some, there is less of a gap than there was three years ago.

The bad news- economic, ethnic, educational, geographic and age-related disparities have not been resolved. **For some people in our community, the digital divide indeed persists.**

Computer and Internet usage has increased since 2001

- Computer ownership in San Diego County has increased between 2001 (74%) and 2004 (81%).
- Home Internet access in San Diego County has increased between 2001 (67%) and 2004 (90%).
- Broadband connections (Cable and DSL) to the Internet have increased substantially in San Diego County between 2001 (30%) and 2004 (54%).
- Broadband has overtaken modem/dial-up as the Internet connection of choice for most San Diego County residents.

Disparities persist for Latinos and South County residents

- In 2004, gaps between computer ownership rates still persist between Latinos and Whites, and between Latinos and the average for all groups. The 15% gap in computer ownership between Whites and Latinos is the largest gap between Whites and any other ethnic group.
- In 2001, Hispanics/Latinos had the lowest rate of computer ownership; this remains the case in 2004. In addition, their ownership rate remains below the average for all ethnic groups. **Although Latinos comprise 28% of San Diego's general population, they make up 40% of the "unwired" population.**
- In 2001, South County residents had the lowest rate of computer ownership; this is still the case in 2004. South County residents' rate of computer ownership also remains below the average rate for all sub-regions.

- South County appears to be at a disadvantage as compared to the rest of the region in terms of computer ownership, Internet access, and computer and Internet literacy; but there appears to be a significant interest among South County residents in computers and the Internet, indicated by an increased desire to use computers and the Internet more, and higher rates of broadband connections as compared to residents in other sub-regions.
- **Cost is still a factor in discouraging home ownership of computers.**
- As in the previous study, senior citizens, aged 65 and over, were least likely to own a computer or use the Internet.

Patterns may exist among people of color regarding technology

- There appear to be patterns among people of color with regard to computers and the Internet:
  - Schools play an important role for learning computer skills.
  - Computers and the Internet are frequently used for tasks that are somewhat related to income mobility or escaping poverty.
  - People of color- regardless of their ethnicity- hold some common attitudes regarding the role of technology in modern society.

Public access is still necessary for some San Diegans

- **The importance of public computer/Internet access points (such as public libraries and community technology centers) is underscored by the fact that 7% of San Diegans do not have computer access at home or anywhere else; this deficit is even more pro nounced for the following sub-groups:**
  - South County residents - 32% do not have computer access at home or elsewhere
  - San Diegans aged 65 and older - 26% do not have computer access at home or elsewhere
  - San Diegans with annual household incomes less than $20,000 - 19% do not have computer access at home or elsewhere
  - Latinos - 10% do not have computer access at home or elsewhere
- The workplace was the most common location for computer access outside the home, followed by schools and public libraries - **but people with low education levels have substantially less access at work (28% compared to the overall average of 49%).**
- Public libraries and community centers were most likely to be used as locations for computer and Internet access outside the home by 18 to 24 year olds, Latinos, and those with annual household incomes of under $35,000.
- **The lowest-income San Diegans (those with household incomes less than $20,000) use public access facilities at more than twice the rate of the general population.**

Computer literacy is high in the region

- General computer and Internet literacy appears to be highest among San Diego City and North Coastal residents, African-Americans, 18 to 44 year olds, and people with annual household incomes of $35,000 or higher.
- Literacy levels in **basic** computer and Internet tasks appears to be relatively similar among ethnicities (less than 20% variation). Latinos report a literacy level in basic computer tasks only slightly below the average for all ethnicities.
- African-Americans and Asians/Pacific Islanders report the highest literacy levels in **advanced** computer and Internet tasks of all ethnicities.
- Trends in computer and Internet literacy levels are predictable when examining age and income:
  - Computer and Internet literacy levels **increase** with **income**
  - Computer and Internet literacy levels **decrease** with **age**

The value of the Internet varies among groups but there are universal tasks

- The top 3 purposes for using a computer were e-mail, educational purposes or homework, and work-related tasks.
- People of color (Latinos, African-Americans, and Asians/Pacific Islanders) typically placed more importance on using the computer to find information on laws and policies that affected them (average 1.07), educational purposes or homework (average 1.54) or in searching for jobs or training (average 1.10) than Whites, who selected those uses on average 0.85, 1.13 and 0.69 respectively.

Lowest income households want to increase their use of computers

- Individuals at the lowest economic level (household income of less than $20,000) are **five times more likely** to want to increase their computer use than individuals with a household income greater than $75,000.
- The majority of respondents (77%) would not like to use a computer more than they currently do. An increased desire for computer use was indicated among the following subgroups: 18 to 24 year olds; Latinos; South County residents; single parent families with children under 18; people who lacked a home computer; people with an education level of High School Diploma/GED or lower; and respondents with household incomes of $35,000 or less.

People learn computer skills at school and at the workplace

- People of color (Latinos, African-Americans, and Asians/Pacific Islanders) typically cited school as the most common place where they learned how to use computers, followed by being self-taught.
- The importance of school as a place to learn how to use computers is particularly dramatic among Latinos: 56% of Latino respondents learned how to use computers at school, vs. 26% who were self-taught, and 17% who learned at work.

For those who use them, computers have a positive impact on people's lives

- The majority of respondents (85%) stated that computers have had a positive impact on their lives.
- Most respondents agreed with the statement "It is important for children to learn computers," whereas most respondents disagreed with the statement "Most people I know do not use com puters."

Recommendations

- **Encourage and support** community technology programs in South County.
- **Coordinate outreach** efforts to make San Diegans aware of the opportunities for computer access and training that are available to them.
- **Continue to promote** and support computer ownership and broadband Internet access.

Introduction

In his ground-breaking book, The 7 Habits of Highly Effective People, Stephen R. Covey recommended that we "seek first to understand." In approaching the digital divide, the RTA and its partners have attempted to do just that- to develop an appreciation of the characteristics and dimensions of this complex social issue. Ultimately, we hope to build community awareness and to contribute in some way to the search for equity in the use and availability of 21st century technologies, technologies that can offer people a higher quality of life.

In 2001, the RTA began this process with the release of its study, *Mapping a Future for Digital Connections, a Study of the Digital Divide in San Diego County*. This report was the first of its kind in the region, and was considered by many to be a first step in building a bridge across what was at that time a significant chasm. That study was designed to foster broader awareness of this issue and call attention to the long term impacts that might result from a continuing failure to take action. As it happened, however, that study contributed to a growing rallying cry that resonated throughout the community, and many individuals, organizations, corporations and civic leaders stepped forward in efforts to begin the process dubbed " digital inclusion."

In 2001, we learned that the digital divide exists in San Diego, and that it was an issue of both social and economic concern. We put forward a snapshot that began to reveal the size, scope and unique characteristics that contributed to this multi-dimensional gap. We learned that in 2001, 60% of all jobs nationwide required computer skills. In San Diego, nearly 80% of all survey respondents cited computer software skills as job requirements. Not surprisingly, in the San Diego of 2001, education and economics were clear indicators of computer ownership. Levels of computer ownership among college-educated people was double that of those with only an elementary-level education. Wealthy households were twice as likely to own computers as those with lower incomes. And for those who did not own computers, access to the Internet and to computer skills was a significant challenge- with implications for their ability to build a higher quality of life for themselves, their families and the community as a whole.

In light of these findings, many programs were established in order to bridge the divide. A significant amount of time, energy and money has been put to work locally. So the current questions are: what does San Diego's digital divide look like in 2004? Are we moving toward digital inclusion?

In revisiting this issue we looked at the factors addressed in 2001, and we dug deeper. This report has also considered additional variables including computer literacy, perceived importance of the various uses of the Internet, and perceptions about the impact of computers and the Internet on their lives. We also inquired as to people's interest in increasing their use of computers and the Internet. The purpose of the study is not to assess the specific activities that have taken place, but, rather, to revisit the situation. We are not attempting to draw specific correlations between intervention activities of the past three years, but rather to update our collective understanding and draw appropriate conclusions.

Clearly the demand for computer and Internet skills as a basis for functioning in modern society has evolved from a luxury to a necessity. Therefore, the ability to make use of these tools- or, rather, the cost of having segments of the population without these tools- is likely to resonate in numerous socioeconomic issues. The digital divide is one piece of a much larger puzzle, and we offer this report in order to help our region identify- and take- the next steps.

Definition of the Digital Divide and its Significance

The term digital divide is believed to have originated in the Clinton administration, between 1995 and 1997. It has been commonly known as a term to describe the gap between those populations that have access to computers and technology and those populations that do not. The term received national attention in 1999 with the release of a report from the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce entitled *Falling Through the Net: Defining the Digital Divide.* The report revealed disparities in rates of computer and Internet access between Whites and people of color. In the NTIA report and in the years since, the digital divide has commonly been measured by the yardsticks of computer ownership and home Internet access.

However, the federal government, mainstream media, and other institutions have begun to rethink the digital divide and question whether or not the divide even exists or if it is still an issue. A shift in perspective at the federal level can be witnessed in the NTIA's computer use reports over time: in 1999 and 2000, the reports were titled Falling Through the Net, implying that there is a population of Americans that are being left behind by technology. The report that followed in 2002 was titled *A Nation Online: How Americans are Expanding Their Use of the Internet.* The report and its conclusions represented a fundamental shift in the federal government's priorities, leading those who only read *A Nation Online* to believe that a digital divide no longer exists or is negligible. This shift is also reflected in a noticeable decrease in media coverage regarding this issue. What little coverage exists often points to how the divide has allegedly closed, or that it was actually never there at all, as evidenced by an article in BusinessWeek in August, 2003, titled "The Digital Divide That Wasn't."[1] The impact of this shift in public perception is significant. For example, reports such as *A Nation Online* have been used as justification for continual efforts to eliminate federal funding programs established by the Clinton administration for community technology initiatives, such as the U.S. Department of Commerce's Technology Opportunities Program and the U.S. Department of Education's Community Technology Centers Program.

In response, many researchers and community advocacy organizations have challenged the definition of the digital divide, and have contested the perception that the divide no longer exists. Even the term "digital divide" has become passé according to some experts. Traditional notions of the digital divide, particularly those presented by mainstream media and the federal government, define disparities by focusing on access to computers and the Internet. This has typically been measured by home computer ownership. Although home computer ownership may be increasing among all segments of the population, computer and Internet technology still may not benefit everyone equally. In *Reconceptualizing the Digital Divide,* Mark Warschauer maintains that digital inclusion efforts must focus on social inclusion as a goal in increasing computer and Internet use among all populations. Social inclusion

> "refers to the extent that individuals, families, and communities are able to fully participate in society and control their own destinies, taking into account a variety of factors related to economic resources, employment, health, education, housing, recreation, culture, and civic engagement."[2]

1 Amey Stone, "The Digital Divide That Wasn't," BusinessWeek, August 19, 2003.

2 Mark Warschauer, "Reconceptualizing the Digital Divide," *FirstMonday,* June 2002.

With social inclusion as a goal, previously attempted solutions that involved increasing home computer ownership have proven to be inadequate in closing the digital divide. Whereas prior examinations of the digital divide focused on home computer ownership, questions now shift to the following:

Literacy

Do individuals possess the skills necessary to utilize the opportunities provided by computer and Internet technology?

Content

Can individuals find online content that is accessible, relevant, and appropriate for their life situations?[3]

Uses and Awareness

What opportunities are available to individuals through computer and Internet technology? Are people aware of these opportunities, and are they able to take advantage of them to improve their quality of life?

To the extent possible, the San Diego Regional Technology Alliance attempted to take these questions into consideration in assessing the extent of San Diego's digital divide.

[3] For more information about relevant online content, visit www.contentbank.org, a website that recommends websites that are particularly suited for low-income or underserved communities.

Overview of San Diego Digital Inclusion Efforts

Since the RTA's 2001 digital divide study, a number of public, private, and non-profit organizations have initiated efforts toward digital inclusion on a national, statewide, and local basis.

Community Technology Centers and Programs in San Diego

Perhaps due to increased awareness of the need for digital inclusion, community technology has become a major focal point, as witnessed by the proliferation of community technology centers and programs locally. A community technology center (CTC) is defined as any non-profit organization, association or government entity that uses computers, the Internet and other information and communications technology tools to provide services directly to individual community members, who would otherwise not have access, and in a community-based location.[4] Community centers with computer labs, libraries, and affordable housing complexes with computer rooms can all be considered CTCs.

PowerUP played an initial role in the proliferation of CTCs in San Diego. From 2001 to 2003, PowerUP was a national program that was designed to "ensure that America's underserved youth acquire the skills, experiences, and resources they need to succeed in the digital age."[5] In an attempt to meet this goal, the program provided existing community centers with computer hardware and technical assistance. In 2001-2002, the Waitt Family Foundation facilitated the introduction of the program in San Diego, by granting hardware, training, and technical assistance to twenty five community centers.[6]

The introduction of this program in San Diego helped build a greater awareness of community technology as a solution to the local digital divide, and as of August 2004, 161 CTCs had been identified in San Diego. It is material to note, however, that the PowerUP program ended in 2003. Activities at the community centers that continued beyond that time were carried on by the individual CTCs themselves.

In addition, a number of local non-profit organizations have supported the efforts of CTCs. Organizations such as the San Diego Regional Technology Alliance, Pangea Foundation, and InfoTAP have provided critical technical support and staff training. San Diego Futures Foundation has provided CTCs and local non profit organizations with over 8,000 refurbished computers. Program support and consulting has also been provided by the RTA, and organizations such as Heads on Fire, which works with CTCs to help introduce youth to technology in creative ways, as a tool for self-expression through visual arts and multimedia. Finally, the San Diego Community Technology Coalition (SDCTC) has provided a forum for community technology practitioners to share resources and best practices, and learn about policies affecting their programs. The SDCTC has also played a significant role in advocating for local community technology programs, particularly at the state level, and in mobilizing local CTCs into becoming advocates themselves.

[4] CTCNet definition

[5] PowerUP, *PowerUP Evaluation Report,* (Seattle, 2002) 10.

[6] Susan Myrland, *PowerUP Site Assessment,* (San Diego, 2003) 2.

With the help of the Waitt Family Foundation and local support organizations, CTCs have not only provided San Diego's low-income populations with computer and Internet access, but they have also delivered valuable programs and services that incorporate technology as a tool to address critical needs faced by individuals attempting to escape poverty. For example, in 2002 and 2003 in an effort to increase parent involvement in their children's education, City Heights Community Technology Center (CHCTC) and San Diego Futures Foundation gave computers to 150 families in City Heights. Each family was required to complete a series of technology training classes and volunteer hours. CHCTC also offers classes on topics such as resume building using Microsoft Word, and how to use the Internet to find career information and job opportunities. Barrio Logan College Institute, in its programs that help prepare at-risk youth for college, teach youth how to use the Internet to conduct research on colleges and identify financial aid opportunities. These examples illustrate how CTCs introduce community members to technology by building awareness of ways in which computers and the Internet can help enhance their quality of life.

The impacts of CTCs have been well-documented, and their significance to low-income communities has been demonstrated in the RTA's survey. A survey conducted by CTCNet found that CTCs[7] provided the following for their constituents:

- An increase in job skills and access to employment opportunities
- An improved outlook on learning and new educational goals
- Technology literacy as a means to achieve individual goals
- New skills and knowledge
- Personal efficacy and affective outcomes
- New uses of time and resources
- Increased civic participation
- Social and community connections

In San Diego, the importance of CTCs for low-income communities is apparent. Only 7% of San Diegans in general have used public libraries or community centers as a place to use the computer, but this figure jumps to 15% for San Diegans with household incomes of less than $20,000.

[7] Clifton Chow, Jan Ellis, June Mark, and Bart Wise, *Impact of CTCNet Affiliates,* (Newton, 1998), Introduction.

Funding Sources for Community Technology

Digital inclusion efforts have also been driven by a number of funders that have identified community technology as a priority and have provided funding for CTCs and non-profit organizations accordingly. Funders that have specifically targeted community technology efforts include the following:

Waitt Family Foundation
http://www.waittfoundation.org

The Waitt Family Foundation has funded a variety of community technology efforts in San Diego, beginning with PowerUP in 2001, followed by technical and program consulting support for local CTCs, and community projects involving the use of wireless technologies.

Hewlett Packard and Beaumont Foundation
http://grants.hp.com
http://www.bmtfoundation.com

Hewlett-Packard and Beaumont Foundation have both provided community technology centers, non-profit organizations, and schools with computer hardware.

Community Technology Foundation of California and California Consumer Protection Foundation
http://www.zerodivide.org
http://www.consumerfdn.org

The Community Technology Foundation of California (CTFC) and California Consumer Protection Foundation (CCPF) have funded non-profit organizations to carry out a variety of community technology endeavors. Both CTFC and CCPF have focused their grants on incorporating the use of technology as a mechanism for improving socio-economic conditions, but CTFC has had an additional emphasis on cultural and disabled accessibility.

Private Sector Initiatives

Locally, Cox Communications has responded to a critical need for broadband access among CTCs through its Cox Tech Center program. Cox provides free or discounted high speed Internet to over forty CTCs throughout San Diego County. Through a national partnership with Boys and Girls Clubs of America, Cox expects to serve an additional ten CTCs within the next year. In addition, many private companies such as SBC have contributed funding to various community technology efforts.

State and Local Government Programs

Finally, there has been a great deal of digital inclusion policy advocacy at both the state and local levels in recent years.

In San Diego, a Digital Inclusion Working Group (DIWG) has been formed as a subcommittee of Mayor Murphy's Science and Technology Commission in the City of San Diego. The DIWG has convened broad-ranging discussions that connect various stakeholders from local government, industry, education, and non-profit organizations in order to better understand and address the digital divide. The DIWG is currently undertaking a study to examine how the City of San Diego can become more fully involved in digital inclusion efforts.

At the State level, advocacy efforts by organizations such as the California Community Technology Policy Group have resulted in legislation increasing funding opportunities and providing discounted services to CTCs, such as the California Teleconnect Fund and the digital divide fund created by AB 855 (Firebaugh) in 2003. The California Teleconnect Fund, which is funded by a surcharge on California residents' telephone bills, provides 50% discounts on Internet access and basic telephone service for CTCs, schools, libraries, and other eligible community based organizations. The digital divide fund created by AB 855 (Firebaugh) provides a funding source for community technology programs. This fund will be paid for through the leasing fees of state-owned property to wireless telecommunications providers for the purposes of locating cell phone towers.

The Extent of the Divide, the Impact of the Divide, and Potential Rationales

In the 2001 study, we recognized that the digital divide carves out our society along ethnic, income, and educational lines. Excerpts of previous findings have been provided in each section, to establish a context for the changes that have occurred over time.

Ethnicity

In 2001, while computer ownership for all ethnic groups in San Diego was well above national averages, the disparity among ethnic groups was more pronounced in San Diego than in the nation as a whole.

- *In San Diego, 81% of Asian and 80% of White households owned computers, while ownership in African-American and Latino households was 59% and 52% respectively.*
- *Home-based access to the Internet replicated national trends for all groups with the exception of Latino households; with only 41% Internet penetration, this group fell below the national rate.*
- *The components that drive the digital divide are multi-dimensional; for instance, ethnicity as a factor in computer owner ship and Internet access was most pronounced at lower income levels.*
- *Fear of technology, a perceived threat to privacy, and the belief that few respondents' peers owned or used computers were identified as key factors in the existence of the 'Ethnic Divide.'*

Extent of the Ethnic Divide

Computer Ownership

In 2004, divisions between computer ownership rates persist between Latinos and Whites. In 2001, Latinos had the lowest rate of computer ownership; this remains the case in 2004. In addition, the Latino ownership rate remains below the average for all ethnicities. In 2004, 81% of San Diego households own computers. 86% of White households in San Diego own computers, compared to only 70% of Latino households in San Diego. This divide is illustrated in Figure 1.

The divide as measured by computer ownership appears to have shifted for African-Americans between 2001 and 2004. Whereas African-Americans' computer ownership rates fell well below the average and those of Whites in 2001, in 2004 African-Americans' computer ownership rate (83%) now exceeds the average (81%) and is almost as high as that of Whites (86%). For Asians/Pacific Islanders, the divide as measured by computer ownership may be shifting as well. In 2001, Asians/Pacific Islanders' computer ownership rate exceeded the average and was almost as high as that of Whites. In 2004, Asians/Pacific Islanders still have a higher rate of computer ownership than Latinos, but their ownership rate is slightly less than the average and not as high as rates for Whites and African-Americans.

The disparity in computer ownership between Latino and White households in San Diego can be examined by analyzing San Diego's "wired" (those who own computers at home) and "unwired" (those who do not own computers at home) populations. This analysis compares Latinos' representation in San Diego's regional population with Latinos' representation in San Diego's wired and unwired populations. As displayed in Figures 2 and 3, Latinos comprise 28% of San Diego's population overall, but 40% of San Diego's unwired population.

In contrast, Whites, African-Americans, and Asians/Pacific Islanders are overrepresented among San Diego's wired population. This represents a shift from 2001, when African-Americans as well as Latinos were underrepresented among San Diego's wired population.

Internet Access and Type

The following data in the Internet access section refers only to those survey respondents who own computers at home.
In 2004, divides in Internet access also persist between Latinos and Whites. In 2004, 90% of San Diego households have home Internet access. 92% of White households in San Diego have home Internet access, compared to only 79% of Latino households in San Diego. Latinos still have the lowest rate of home Internet access, and are the only ethnicity whose rate is below the average. This divide is illustrated in Figure 4.

As witnessed with computer ownership, the divides among other ethnic groups in San Diego appear to have shifted as well. Internet penetration among African-Americans (88%) is now almost as high as that of Whites (92%), and Asians/Pacific Islanders' rate of home Internet access is the highest of any ethnicity (97%).

There is a slight disparity between Latinos and other ethnicities in Internet connection speed, which is sometimes examined as a digital divide issue. In San Diego overall, 54% of the population have broadband Internet connections (DSL or cable modem), while 41% have modem or dial-up Internet connections. With the exception of Latinos, all racial groups have higher rates of broadband connections than modem or dial-up connections. A slightly higher percentage of Latinos have modem connections (49%) than broadband connections (47%). Asians/Pacific Islanders have the highest rate of broadband connections (65%). See Figure 5.

Figure 1

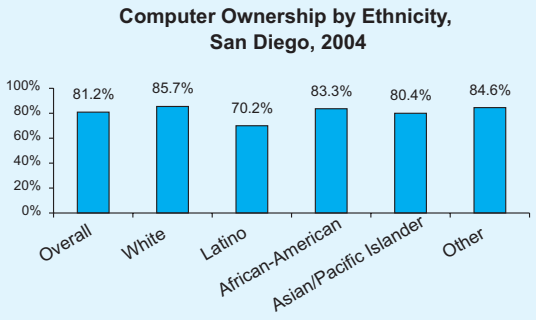


Figure 2

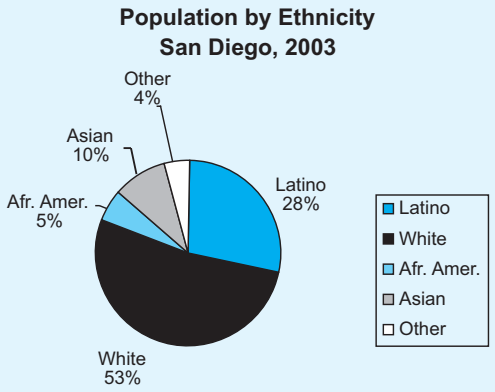


Figure 3

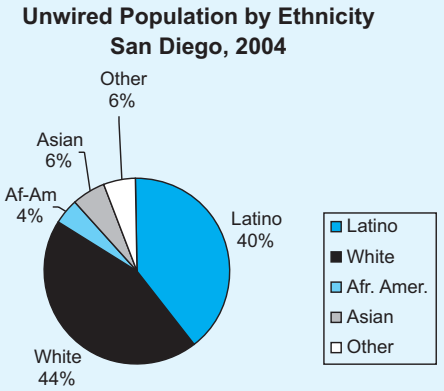


Figure 4

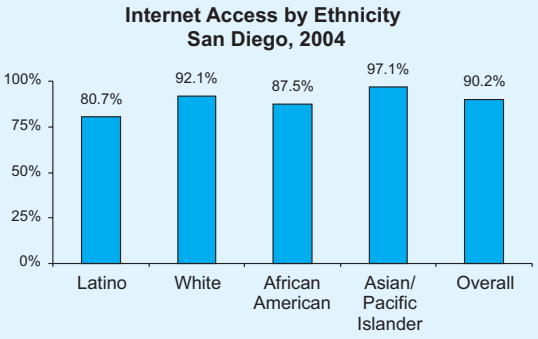


Figure 5

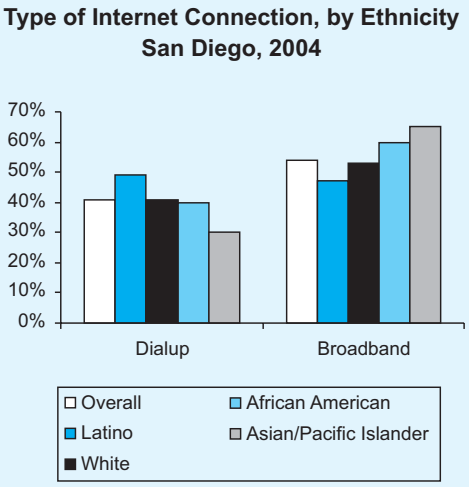
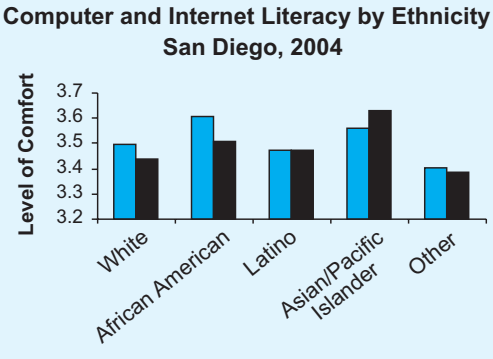


Figure 6



Legend: Importance	
Measure:	*Value:*
Not at all Important	*+0*
Somewhat Important	*+1*
Very Important	*+2*

Comfort with Specific Tasks

When taking computer literacy into account as an indicator of the digital divide, ethnic disparities persist in San Diego. The use of mean scores is employed when examining computer literacy. Survey respondents were asked about their comfort level with specific computer or Internet-related tasks. Responses were assigned scores, with 4 for "very comfortable," 3 for "somewhat comfortable," 2 for "somewhat uncomfortable," 1 for "very uncomfortable," and 0 for "no experience. Responses were aggregated to determine the average or "mean" score for each task. A higher mean score (closer to 4) indicates a higher level of literacy, whereas a lower mean score (closer to 1) indicates a lower level of literacy. Please see Methodology for information on how tasks were classified.

Latinos have slightly lower levels of comfort with computers in general (mean score of 3.47) than other ethnicities, but they are the only ethnicity besides Asians/Pacific Islanders that appears to be more comfortable using the Internet in general than computers.

African-Americans have the highest levels of comfort with using a computer in general (3.60) of all ethnicities, followed by Asians/Pacific Islanders (3.56). Comfort with using the Internet in general is highest among Asians/Pacific Islanders (3.63), followed by African-Americans (3.51). See Figure 6.

Whites have the second lowest level of comfort with computers in general (3.50), and the lowest level of comfort with the Internet in general (3.44).

In examining computer literacy, there is minimal disparity among ethnicities, particularly in regard to basic computer literacy. Latinos have a literacy level in basic computer tasks that is only slightly below the average for all ethnicities. African-Americans and Asians/Pacific Islanders have the highest literacy levels in advanced computer and Internet tasks of all ethnicities. See Figure 7.

Impact of the Ethnic Divide

Locations for Computer Access

San Diegans were asked about where they use the computer outside of the home. "At work" and "no access outside of the home" were the most prevalent answers across all ethnicities, followed by "school," and "public libraries or community centers." Latinos were the most likely ethnicity to use computers at school (16%) and public libraries or community centers (10%). African-Americans were the second most likely ethnicity to use public libraries or community centers as a point of computer access outside the home (9%). See Figure 9.

Public libraries and community centers are often thought of as access points for people who do not own computers, but they are places of access for people who already own computers at home as well. This is particularly true for people of color, as compared to Whites: 10% of Latinos who own computers at home and 8% of African-Americans who own computers at home also use public libraries and community centers as computer and Internet access points, compared to 6% of Whites.

Desire for Increased Computer or Internet Use

The majority of San Diegans indicated that they would not like to use a computer (77%) or the Internet (76%) more than they currently do. However, there appears to be an increased desire for computer and Internet use among people of color in general and Latinos in particular as compared to other groups, as shown in Figure 10. Respondents in San Diego who indicated that they would like to use a computer or the Internet more than they currently do were most likely to be Latino (33% each for computer and Internet), African-American (30% for computer), or Asian/Pacific Islander (37% for Internet).

Differences in Uses Across Ethnicity

The use of the computer for specific tasks appears to be equally significant among all ethnicities for certain tasks, but computer use is especially important to people of color for a particular subset of tasks that are useful in achieving economic mobility or improving one's quality of life.

Survey respondents were given a list of tasks for which a computer might be used and were asked to indicate how important it was to them to use a computer for each purpose. Responses were assigned scores, with 2 for "Very Important," 1 for "Somewhat Important," and 0 for "Not at all Important." Mean scores were calculated for the sample and for subgroups.

Figure 7

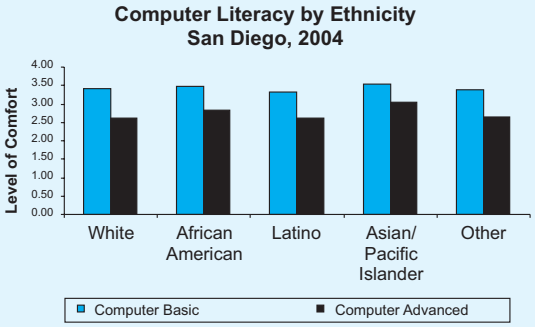
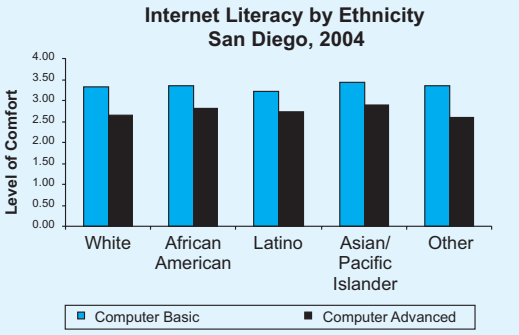
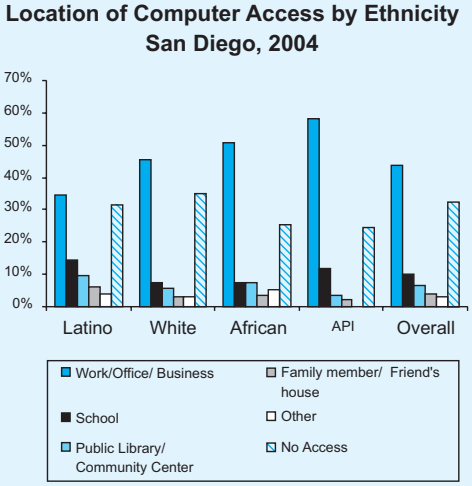


Figure 8



Legend: Comfort Level	
Measure:	*Value:*
No Experience	*+0*
Very Uncomfortable	*+1*
Somewhat Uncomfortable	*+2*
Somewhat Comfortable	*+3*
Very Comfortable	*+4*

Figure 9



E-mail, education purposes or homework, and work-related tasks were the top 3 uses for all ethnicities with the exception of Whites, for whom e-mail, work-related tasks, and travel information or arrangements were the top 3 uses.

As seen in Table 1, people of color in San Diego (Latinos, African-Americans, and Asians/Pacific Islanders) typically placed more importance on tasks that may be related to income mobility or escaping poverty than Whites. Those tasks were as follows:

- Using the computer to find information on laws and policies that affected them
- Educational purposes or homework
- Searching for jobs or training

Table 1

Mean Scores of Tasks by Ethnicity San Diego, 2004

Task	*People of Color*	*White*	*% Difference*
Obtain information on laws and policies	1.07	0.85	20%
Educational purposes or homework	1.54	1.13	27%
Searching for jobs or training	1.10	0.69	37%

Legend: Importance

Measure:	*Value:*
Not at all Important	*+0*
Somewhat Important	*+1*
Very Important	*+2*

Where They Learned How to Use Computers and the Internet

There are interesting differences in where San Diegans of different ethnicities learn how to use computers and the Internet. In particular, school is the place where most Latinos learn how to use computers (56%) and the Internet (42%). When asked where they learned how to use computers, school was the most common response for people of color in general (average 47%), whereas self-taught was the most common response for Whites (37%). When asked about where they learned to use the Internet, Whites (46%), African-Americans (44%), and Asians/Pacific Islanders (49%) tended to report that they taught themselves. See Figure 12.

Impact on Life

Survey respondents were asked if computers and the Internet have had a positive or negative impact on their lives. San Diegans of all ethnicities overwhelmingly reported that computers and the Internet have positively impacted their lives. African-Americans (92%) had the highest percentage of respondents reporting a positive impact, whereas Latinos (83%) had the lowest. See Figure 13.

Potential Rationales for the Ethnic Divide

Reasons for not Owning a Computer

High cost and existing access to a computer outside the home were the most important reasons for not owning a computer at home cited by both Latinos and Whites[8]. Those who identified themselves as non-computer owners in the survey were asked why they did not own a computer at home; they were also asked to indicate the degree of importance for each reason they cited. As seen in Table 2, Latinos felt more strongly about their reasons for not owning a home computer than did Whites. In addition, not knowing how to use a computer was a stronger justification for not owning a computer at home for Latinos than it was for Whites. Finally, Latinos felt more strongly about not wanting their children to have access to a computer at home, as compared to Whites.

Figure 10

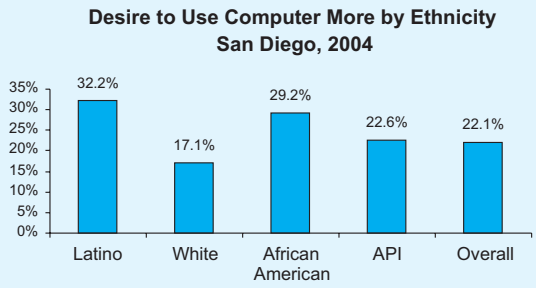


Figure 11

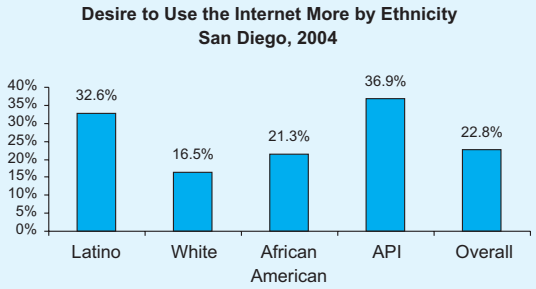


Figure 12

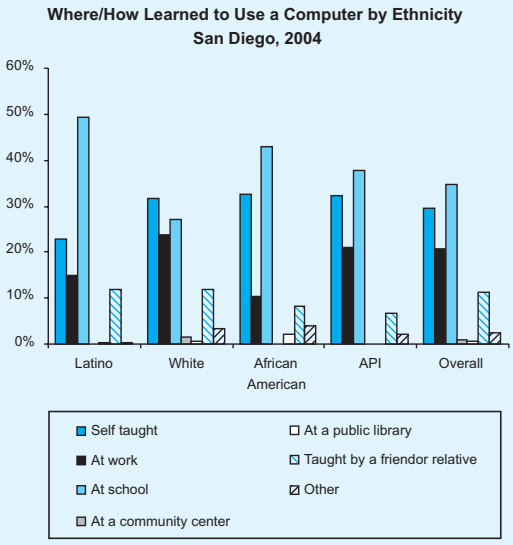
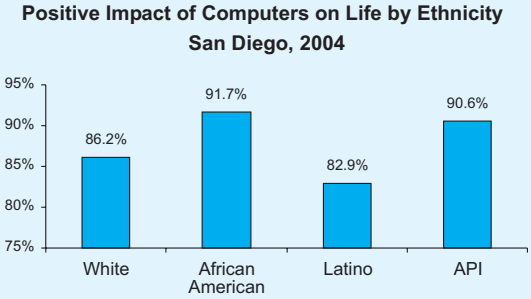


Figure 13



[8] Only the aggregate responses of Latino and White respondents are analyzed in this section due to small sample sizes in the other ethnicity subgroups.

Table 2

Mean Scores of Tasks by Ethnicity San Diego, 2004			
Task	*People of Color*	*White*	*% Difference*
Computers are too expensive	1.20	0.89	1.10
Have access to computer outside of home.	1.14	0.88	1.02
I don't have enough time to use a computer.	0.85	0.81	0.80
I don't know how to use a computer.	0.85	0.64	0.77
I don't know what I would use a computer for.	0.73	0.63	0.73
Don't want children to have computer access at home.	0.77	0.35	0.60
Learning how to use a computer is too difficult.	0.53	0.53	0.59

Legend: Importance	
Measure:	*Value:*
Not at all Important	*+0*
Somewhat Important	*+1*
Very Important	*+2*

Attitudes Toward Computers

Survey respondents were asked whether or not they agreed with a series of statements about computers and technology, and to indicate the degree to which they agreed or disagreed with each statement. In general, most survey respondents agreed that it is important for children to learn computers, whereas most respondents disagreed that most people they know do not use computers.

Latinos and Asians/Pacific Islanders tended to agree more with the statements "We have come to rely too much on technology and science," and "Modern technology presents a threat to privacy and freedom," as compared to other ethnicities. African-Americans, in general, know people who use computers, but to a lesser extent than respondents of other ethnicities. See Table 3.

Table 3

Agreement With Statements by Ethnicity San Diego, 2004

Statement	*White*	*Latino*	*African American*	*Asian/Pacific Islander*
"We have come to rely too much on technology and science"	-0.04	0.70	0.35	0.52
"Most people I know do not use computers"	-1.35	-0.94	-0.46	-0.90
"Technology presents a threat to privacy and freedom"	.07	0.40	0.17	0.29
"It is important for school age children to know how to use computers"	1.76	1.76	1.71	1.90

Legend: Importance

Measure:	*Value:*
Strongly Disagree	*-2*
Disagree Somewhat	*-1*
Agree Somewhat	*+1*
Strongly Agree	*+2*

Income

In 2000, income was the single most important determinant of access to information technology nationwide.

- *The gap in access and ownership in San Diego, however, was less than national averages.*
- *Members of lower-income households were more likely to access the Internet at school or at a public library, while people in middle or upper-income ranges were most likely to access the Internet at work.*
- *The 2001 study revealed a clear, linear relationship between income levels and negative feelings about our reliance on technology.*

Extent of the Income Divide

Computer Ownership

Between 2001 and 2004, home computer ownership increased in our region by over 7% (74% of all respondents in 2001 to 81% in 2004). However, income disparities still remain significant when it comes to home computing. While 81% of regional households now have computers available at home, those with incomes below $35,000 remained below that regional average. 34% of those with annual incomes below $20,000 still did not have home access, and 28% of those households earning between $20,000-$34,999 lacked home computers. See Figure 14.

Internet Access and Type

Relative to home computer ownership, Internet access was up, with 90% of households with home computers having Internet access as well. But the income divide persists for households earning less than $50,000, where 16% still lack Internet access at home. See Figure 15.

The $50,000 income mark was also a differentiator relative to the types of Internet access, dividing broadband access (DSL or cable) with its speed and relative ease of use in the increasingly more media-rich environment of the web, from dial-up or modem usage. Region-wide, 41% of households use a modem or dial-up connection, but in households earning under $20,000 annually, 54% were on dial-up. In the $20,000-$34,999 income range, modem usage was at 55% and from $35,000-$49,999 dial-up usage was at 49%.

The use of cable for broadband access averaged 38% overall. Households earning under $20,000 annually cited cable usage at 24% and in the $20,000-$34,999 income range cable usage was at 25%. At the $35,000-$49,999 income range, however, cable accounted for 40%, which was above the regional average. See Figure 16.

The use of DSL, which represents the least-used type of broadband connection in the region as a whole (17% overall), was more comparable across all income brackets. Interestingly, the use of DSL was at or above the regional average for the lowest income households, but dropped to below average for households earning between $20,000- $74,999. It is possible, however, that this is an issue of service availability. Data on DSL service by areas within the region was not available. Perhaps limited availability of DSL service in residential areas has had an impact on usage, overall, but that issue has not been addressed in this study. See Figure 17.

DIGITAL DIVIDE REVISITED - RTA, 2004

Computer Literacy as Measured by Comfort with Specific Tasks

When taking computer literacy into account as an indicator of the digital divide, ethnic disparities persist in San Diego. The use of mean scores is employed when examining computer literacy. Survey respondents were asked about their comfort level with specific computer or Internet-related tasks. Responses were assigned scores, with 4 for "very comfortable," 3 for "somewhat comfortable," 2 for "somewhat uncomfortable," 1 for "very uncomfortable," and 0 for "no experience." Responses were aggregated to determine the average or "mean" score for each task. A higher mean score (closer to 4) indicates a higher level of literacy, whereas a lower mean score (closer to 1) indicates a lower level of literacy. Please see Methodology for information on how tasks were classified.

Not surprisingly, the higher the household income the higher the level of comfort for both general computer literacy and general Internet literacy. Naturally, this correlation reflects other factors, largely educational, that tend to drive up income levels; nevertheless, those households with incomes ranging from $35,000 and above appear to have a higher-than-average level of comfort with the use of computers in general, and at the $50,000 income level, survey respondents seemed to have a higher level of comfort with the general use of the Internet than average.

Those households with incomes of $34,999 and below appear to have a lower level of comfort with the general use of computers, and at $49,999 and below, there appears to be a lower level of comfort with the general use of the Internet. See Figures 18 and 19.

Higher household income levels also reflected increased comfort with more advanced computing tasks, which may in fact correlate with educational factors, in that many of the jobs that pay higher wages also require increased levels of education.

Those with incomes ranging from $35,000 and above appear to have a higher level of comfort with computer basic tasks. With an overall mean score of 3.41 for basic computing and 2.66 for advanced computing tasks, households with incomes of $34,999 and below appear to have a lower level of comfort with computer basic tasks than average. Beginning at the $35,000 level, respondents seem to have a higher level of comfort with computer advanced tasks than average.

Figure 14

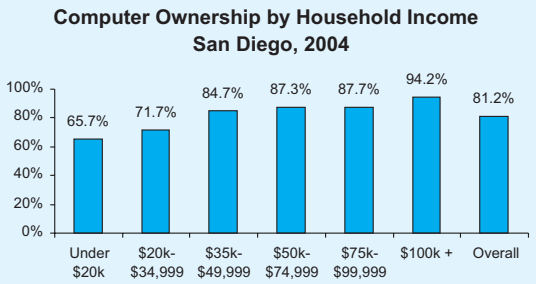


Figure 15

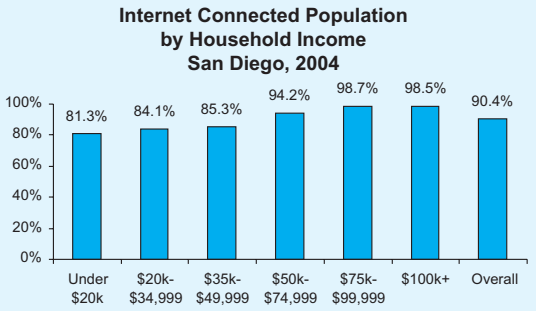


Figure 16

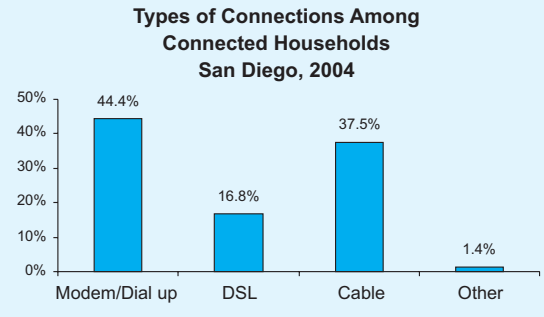


Figure 17

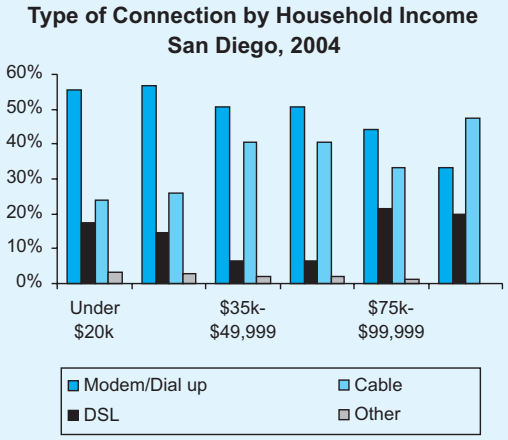
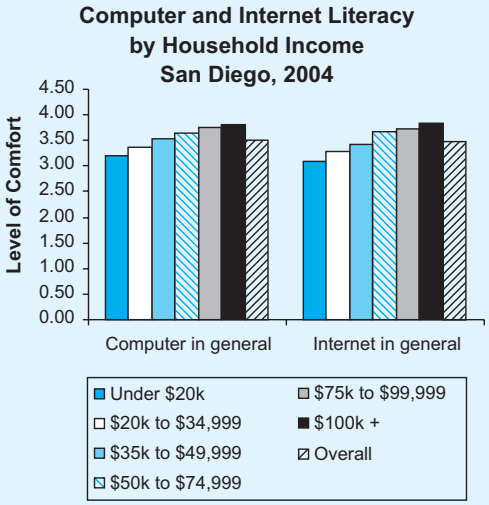


Figure 18



Legend: Comfort Level	
Measure:	*Value:*
No Experience	*+0*
Very Umcomfortable	*+1*
Somewhat Umcomfortable	*+2*
Somewhat Comfortable	*+3*
Very Comfortable	*+4*

Impact of the Income Divide

Importance of public access points (Libraries and Community Technology Centers-CTCs)

Cost was a significant barrier to computer ownership in the initial digital divide study, and it continues to be a factor in the persistence of this disparity. However the increase in the availability of computers in public places (especially in schools) public libraries and community centers may have made some difference. The workplace, though, seems to be the strongest access point overall.

The majority of respondents with annual household incomes of less than $20,000 (not counting students) had no access to computers and the Internet outside the home (55%, which was well above the overall regional average of 36% for those with no access). Those people within this subgroup who reported outside access made use of the workplace (14%), schools (14%) and public libraries and community centers (15%) for their computer access. Once the income levels of the respondents reached $35,000, their usage of public libraries and community centers dropped dramatically to 2%.

It is important to note, however, that the overall usage of public library and community center facilities for all income levels (without accounting for students) was only 6%. So people with economic challenges are making far greater use of public facilities than the population as a whole. Since more widespread availability of public computing facilities was in many ways a response to the existence of the digital divide, it may be fair to suggest that the use of public facilities by people with lower incomes validates community-wide efforts to provide increased computer access in low income communities. See Figure 20.

Desire to Increase Computer or Internet Use

The majority of respondents (77%) would not like to use a computer more than they currently do. An increased desire for computer use was indicated among some subgroups however, which included respondents with household incomes of $35,000 or less.

When survey respondents as a group were asked whether they desired to increase their use of computers, households under $20,000 wanted more use (39%). At the $20,000- $34,999 level that desire was reported at 33%. See Figure 21.

Interest in increasing Internet usage followed a similar pattern, with an increased desire to use the Internet indicated among respondents with lower household incomes. 32% of households with incomes of under $20,000 desired to increase their Internet usage. At the $35,000 level, however, interest dropped to the regional response (24%).
See Figure 22.

Differences in Uses Across Income

When respondents ranked their uses of the Internet, there were some interesting parallels across income divisions, as well as some striking differences. Following, in Table 4, are the top 5 Internet uses identified, sorted by household income levels.

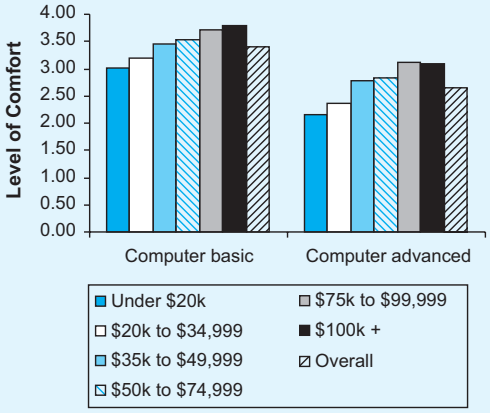
Table 4

Differences in Internet Use by Household Income, San Diego, 2004

Under $20,000	
1.	education
2.	email
3.	health/medical info
4.	travel info
5.	hobbies/interest info
$20,000-$34,999	
1.	email
2.	education
3.	hobbies/interest info
4.	product/service info
5.	work related tasks
$35,000-$49,999	
1.	email
2.	education
3.	travel info
4.	hobbies/interest info & law/policy info (tie for 4th)
5.	work related tasks
$50,000-$74,999	
1.	email
2.	travel info
3.	hobbies/interest info
4.	work related tasks
5.	purchase products
$75,000-$99,999	
1.	email
2.	work related tasks
3.	travel info
4.	hobbies/interest info
5.	product/service info
$100,000+	
1.	email
2.	travel info
3.	product/service info
4.	work related tasks
5.	managing finances

Figure 19

Computer Literacy by Household Income
San Diego, 2004



Legend: Comfort Level

Measure:	*Value:*
No Experience	*+0*
Very Uncomfortable	*+1*
Somewhat Uncomfortable	*+2*
Somewhat Comfortable	*+3*
Very Comfortable	*+4*

Figure 20

Location of Internet Access by Household Income
San Diego, 2004

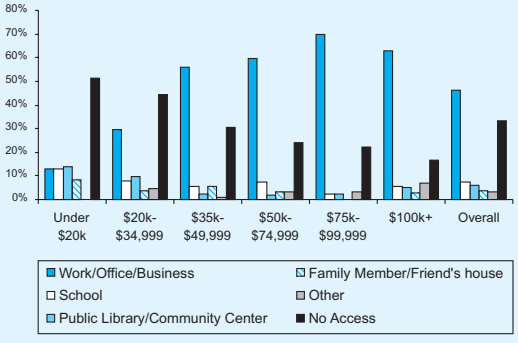


Figure 21

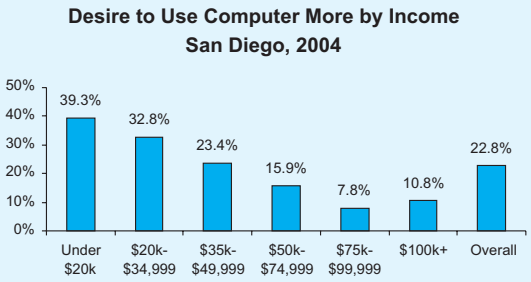


Figure 22

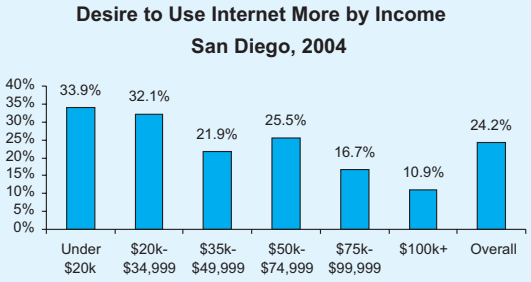
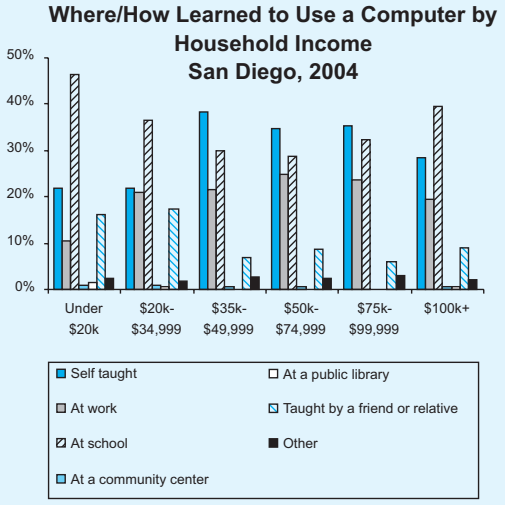


Figure 23



Although email is on everyone's "top 5" list, education ranks first in the lowest income group, and is included in all three of the income groups below the $50,000 level. This may be due to a higher amount of students in the lowest income bracket. Work-related tasks and travel are cited by all except for the lowest income group; rather there is an interest in health and medical information that is not of great importance to the other groups. Hobbies and related information are highly sought by all except the highest income group, which is the only group interested in managing finances. The mid-income groups were interested in product purchases or services, but that was not cited as important at the highest or lowest income levels. Interest in using the Internet for information about laws or public policy was also important at one mid-range income level.

The picture this reveals is not necessarily unexpected, but may be helpful in understanding the value of the Internet in people's lives and the ways in which economic issues are reflected in Internet usage patterns. To the extent that some of the persistence of the income divide may be due to perceived lack of relevance of computing and the Internet to people's lives, perhaps this information can be applied to future efforts aimed at closing the divide. See Table 5 for complete rankings.

Table 5

Importance of Tasks by Income San Diego, 2004

Task	*Under $20k*	*$20k-$34,999*	*$35k-$49,999*	*$50k-$74,999*	*$75k-$99,999*	*$100k+*
Email	1.41	1.35	1.47	1.65	1.45	1.72
Online chatting	-0.36	-0.23	-0.53	-0.42	-0.74	-0.10
Getting health or medical information	0.93	0.57	0.39	0.82	0.42	0.59
Managing finances	0.33	0.26	0.46	0.71	0.44	0.86
Keeping up to date on current events	0.47	0.57	0.63	0.76	0.61	0.84
Entertainment or sports	0.41	0.19	0.18	0.33	0.06	0.34
Start or maintain your own business	-0.03	-0.08	-0.03	0.03	-0.33	0.12
Create graphics	0.27	0.23	0.26	0.40	0.29	0.23
Gather information about products and services	0.73	0.66	0.67	1.09	0.81	1.09
Purchase products or services	0.46	0.19	0.57	0.92	0.54	0.81
Search for jobs or training	0.41	0.45	0.16	0.46	0.17	0.04
Do work related tasks	0.80	0.62	0.73	0.95	1.03	1.07
Gather information about personal hobbies/interests	0.86	0.87	0.74	1.17	0.84	0.93
Find info about laws/policies that affect you	0.34	0.38	0.74	0.74	0.28	0.57
Travel information/arrange-ments	0.88	0.49	0.87	1.32	1.01	1.32
Education purposes or homework	1.47	1.05	0.91	0.91	0.72	0.80
Participate in or learn about community activities	0.24	0.26	0.20	0.38	-0.05	0.28
Participate in or learn about political activities	0.47	0.07	0.03	0.20	0.08	0.05

Legend: Importance

Measure:	*Value:*
Not at all Important	*+0*
Somewhat Important	*+1*
Very Important	*+2*

Impact on Life

When asked whether using a computer and the Internet had a positive or negative impact on their life, the positives far outweighed the negatives, but the impact was increasingly more positive as incomes rose. For all households, regardless of whether or not there was a computer in the home, positive impacts were reported by households with under $20,000 at 79%, in the $20,000-$34,999 range at 82%, and in the $35,000- $49,999 level at 89%. That response was virtually the same for those in higher incomes, and jumped to 94% for households of over $100,000 in annual income. Those reporting that computers and the Internet had no impact on their lives followed the same trend. 18% of households with under $20,000 reported no impact on their lives. At incomes of $20,000-$34,999 the no impact response was reported by 15% of respondents. It dropped sharply to between 7-9% in the next higher income brackets, and dropped to 3% at the $100,000 and above level. Clearly, there is a difference expressed in the value of these tools that may be at the heart of usage issues and bears further attention. See Table 6.

Table 6

Computer Impact on Life by Income

Impact	*Under $20k*	*$20k-$34,999*	*$35k-$49,999*	*$50k-$74,999*	*$75k-$99,999*	*$100k+*
Positive	78.51%	81.91%	88.89%	89.13%	89.01%	94.24%
Negative	3.31%	2.66%	3.97%	2.17%	3.30%	2.88%
No Impact	18.18%	15.43%	7.14%	8.70%	7.69%	2.88%

Respondents were asked where and how they learned to use computers and the Internet. The primary responses, overall, were that they were either self-taught (41%) or learned at school (24%) or work (16%). However, when considered by income levels, these responses shifted considerably. At incomes of under $20,000, most respondents learned at school (47%). 22% were self-taught, 17% were taught by a friend and only 11% learned at work. A negligible percentage of respondents learned at a community center or public library, across all income levels. Community centers and libraries were utilized more by those with incomes under $20,000 than by any other income group, but were still their source of learning only 1% and 2% of the time, respectively. See Figure 23.

Potential Rationales for the Income Divide

Reasons for Not Owning a Computer

Although the expense of owning a computer was the factor most cited as a rationale by those who did not own one, when asked if their lack of ownership was due to the expense, those in the mid-income ranges of between $20,000-$74,999 actually cited the cost (reporting higher mean scores at 1.58, 1.54 and 1.49 respectively) more frequently than did those respondents at the lowest income levels (1.37).

Other concerns expressed that did not particularly fall into patterns based on household income include: access outside the home, lack of time or reasons to use a computer, or difficulties in learning. A reluctance to allowing children to have access to a computer at home was also cited as a rationale. See Table 7.

Table 7

Reasons for Not Owning a Computer by Income, San Diego 2004

Reason	*Under $20k*	*$20k-$34,999*	*$35k-$49,999*	*$50k-$74,999*	*$75k-$99,999*	*$100k+*
Computers are too expensive	1.37	1.58	1.54	1.49	1.40	1.00
Have access to computer outside the home	0.93	1.00	1.10	1.24	1.55	0.50
I don't have enough time to use a computer	0.83	0.83	0.60	0.71	1.09	1.13
Don't know how to use a computer	1.07	0.61	0.50	0.94	0.55	0.00
I don't know what I would use a computer for	0.95	0.81	0.35	0.65	0.55	0.63
I don't want my children to have computer access at home	0.52	0.72	0.35	0.41	0.00	0.50
Learning how to use a computer is too difficult	0.76	0.54	0.35	0.65	0.64	0.00

Legend: Importance

Measure:	*Value:*
Not at all Important	*+0*
Somewhat Important	*+1*
Very Important	*+2*

Reasons for Not Using Public Access Points

Interestingly enough, reasons given for not using public access points for computer and Internet usage did not vary significantly by income levels. All levels of income cited sufficient access elsewhere as their predominant reason for ignoring this opportunity. Location was the second largest response, and this too was consistent for all income levels, although the specific percentages varied. See Table 8.

Table 8

Reasons for Not Using Computer or Internet at a Library or Community Center
San Diego, 2004

Reason	*Under $20k*	*$20k-$34,999*	*$35k-$49,999*	*$50k-$74,999*	*$75k-$99,999*	*$100k+*
Location	11.2%	10.2%	12.4%	7.9%	15.7%	6.8%
Inconvenient hours	4.6%	5.3%	16.8%	8.0%	3.9%	11.5%
Did not know it was available	9.9%	2.0%	2.2%	0.0%	0.0%	1.5%
Don't know how to use it	1.5%	3.9%	2.0%	0.0%	0.9%	0.9%
Have sufficient access elsewhere	20.3%	19.7%	19.7%	26.5%	19.2%	19.9%
The wait is too long	3.0%	4.8%	4.2%	0.0%	0.0%	2.2%
Safety/security/ privacy concerns	4.0%	3.3%	0.0%	1.6%	2.1%	0.9%
Inaccessible for people with disabilities	2.5%	0.0%	2.1%	0.0%	1.4%	1.4%
Other	6.6%	2.9%	2.2%	6.4%	0.0%	0.0%

Attitudes Towards Computers

Survey respondents were asked about their attitudes towards computers, and clearly attitudes differed between those in the lower income brackets and those with incomes of $50,000 and above. Survey respondents were asked four questions, to which they could respond "strongly agree," "agree somewhat," "disagree somewhat," "strongly disagree," and "don't know." Answers were coded as follows:

Strongly Disagree	-2
Somewhat Disagree	-1
Somewhat Agree	+1
Strongly Agree	+2
Don't know	0

Responses were aggregated to determine the average or "mean" score for each task. A higher mean score (closer to 2) indicates a higher level of agreement, whereas a lower mean score (closer to -2) indicates a lower level of agreement.

When asked whether we rely too much on technology and science, the responses ranged from a mean score of .86 at the under $20,000 level of income to .54 at the $20,000-34,999 level and to .45 in the $35,000-$49,999 levels. In the three income groups of over $50,000 their opinions shifted to mean scores of .08, .11 and -.40, respectively. Those with greater wealth did not think that reliance on technology was a problem, but those with lower incomes definitely did.

Respondents were asked whether most people they knew did not use a computer. This question elicited a response that directly related to income levels. The higher the income, the more their peers had computers, with mean scores ranging from .73 at the under $20,000 income level to -.40 at $100,000 and above, with a sharp difference delineated at the income level under and over the $50,000 mark.

This same trend appeared in response to the statement, "Modern technology, and in particular, computers, presents a real threat to our privacy and freedom." The mean scores descended as incomes rose, with, again, a dramatic difference between those under and over the $50,000 income level.

However, when asked whether they felt it was important for school-aged children to learn how to use a computer, the responses were very similar across all income levels. Mean scores ranged from 1.72 (lowest income) to 1.84 (highest). Clearly on that matter there is consensus regardless of economic status. See Table 9.

Table 9

Level of Agreement with Statement by Income

Statement	*Under $20k*	*$20k-$34,999*	*$35k-$49,999*	*$50k-$74,999*	*$75k-$99,999*	*$100k+*
We have come to rely too heavily on technology and science	0.86	0.54	0.45	0.08	0.11	-0.40
Most people I know do not use computers	0.73	0.54	0.45	0.08	0.11	-0.40
Technology is a threat to privacy and freedom	0.45	0.36	0.22	0.02	-0.09	-0.04
It is important for school aged children to know how to use computers	1.72	1.74	1.82	1.78	1.88	1.84

Legend: Level of Agreement with Statements

Measure:	*Value:*
Strongly Disagree	*-2*
Disagree Somewhat	*-1*
Agree Somewhat	*+1*
Strongly Agree	*+2*

Education

In 2000, the 'Education Divide' resembled the income divide and results in San Diego were comparable with national trends.

- *Education levels were closely correlated to fear of computers. Those with lower levels of education did not know how to use computers, nor did they appreciate that computers might be of value to their lives.*
- *The gap in computer ownership and Internet access between the least and most-educated people in San Diego was somewhat smaller than the national average.*

Extent of the Education Divide

Computer Ownership

Ownership clearly follows education levels, pointing to a continuing disparity between those with lower and higher levels of education. Of those respondents with a high school education or a GED, only 65% owned a home computer. That compares to 82% for those with some college, 89% for college graduates and 93% for those with post-graduate degrees. See Figures 24 and 25.

Internet Access and Type

While Internet access varied slightly by education levels, it is interesting to note that once there was a computer in the home there was far less difference between the groups having Internet access. Respondents with high school or GED levels of education reported 82% home Internet access, or 8% less than the regional average. While this still represents an education divide, this figure represents half the difference of the computer ownership statistic, and may have implications for the gradual growth of comfort with the Internet and the value of new technology for home use once basic computing has been achieved.

Once a respondent had some college education they crossed the dividing line for Internet access. Respondents with some college education reported home Internet access at 91%, college graduates were at 92%, and 94% of those with advanced degrees had home Internet access.

The education divide was reflected in the use of broadband (Cable or DSL) versus dial-up or modem as a means of Internet access. Overall, regional Internet access was by modem or dial-up (41%), cable (38%), DSL (16%) and other (2%) or unknown (3%).

While modem use overall was at 41%, those with a high school or equivalent education were reaching the Internet though dial-up 51% of the time. This group had cable access at 25% (13% lower than the region overall) and access via DSL at 19% (slightly higher than the regional average). Given the increasing complexity of web-based content, the continuing prevalence of modem usage versus broadband access represents a slower and potentially less user-friendly experience for the lower educational group.

Those respondents with some college were also slightly below the regional averages for broadband access. 43% were modem users, 36% had cable and 16% used DSL. With a college degree, modem usage was at the regional average of 41% but post graduate that mode of access went to 31%. Cable access increased significantly as education levels increased. 40% of college graduates and 48% of those with post graduate degrees used cable for their Internet access. See Figures 26 and 27.

Computer Literacy as Measured by Comfort with Specific Tasks

Not surprisingly, general computer literacy appears to increase as the level of education increases. As noted earlier, survey respondents were asked to identify their comfort levels, from "very comfortable" to "no experience" with a list of tasks that ranged from very basic (using a computer, the Internet or using a word processing program) to gradually more advanced tasks (like downloading files from the Internet or installing software). The mean scores for the overall level of computing comfort followed educational levels quite closely: 3.17 for high-school respondents; 3.51 for respondents who have done some college; 3.66 for college graduates and 3.75 for post graduates.

Almost the same analysis can be made for general Internet literacy. Only a small variation of the mean scores appears: 3.09 for high-school respondents; 3.46 for respondents with some college background; 3.67 for college graduates and 3.77 for post graduates.

Respondents who have some college (3.51), college graduates (3.66) and post graduates (3.75) appear to be more computer literate than average (3.50) whereas high-school respondents seem to be less (3.17). College graduates (3.67) and post graduates (3.77) appear to be more Internet literate than average (3.47) whereas high-school respondents (3.09) and those who have some college (3.46) seem to be slightly less Internet literate.
See Figure 28.

All respondents, regardless of their education level, seem to be more comfortable with general basic computer tasks than they are with advanced computer tasks. As the survey identified more complex or advanced computing tasks, the comfort levels, as indicators of levels of computer literacy, shifted, again along the lines of education. The mean scores for the more advanced computing tasks were as follows: 3.00 for high-school respondents, 3.38 for respondents who have done some college, 3.59 for college graduates and 3.80 for post graduates. We can see the same pattern with the computer advanced tasks as with basic literacy. College graduate (2.85) and post graduate (3.00) respondents appear to be more comfortable with computer advanced tasks than the average (2.66). On the other hand, high school respondents (2.26) and respondents with some college (2.55) are less comfortable with these tasks than the overall population.
See Figures 29 and 30.

Figure 24

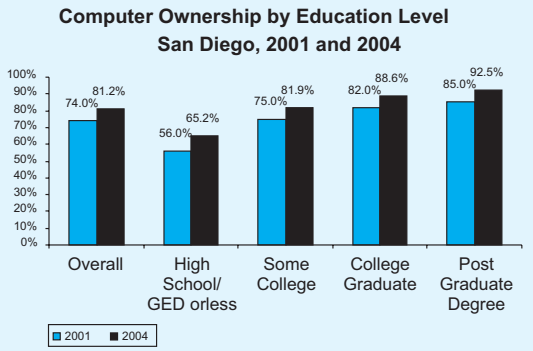


Figure 25

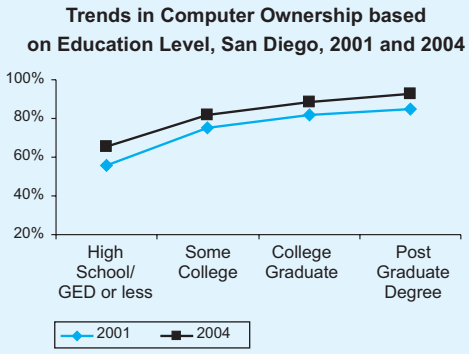
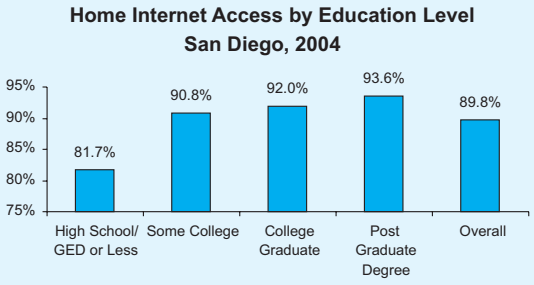


Figure 26



Impact of Education Divide

Importance of Public Access Points (Libraries and Community Technology Centers-CTCs)

As the percentage of the population with computer and Internet access at home continues to increase, it may seem as though the need for public access points may be diminishing. In fact, access at work seems to be the predominant alternative for the region overall. When asked where they use a computer, survey respondents cited these locations: office or work (49%); school (11%); public library (7%); family member or friend's house (4%) and other (3%). Fewer than one percent of respondents used a community center (.7%), church (.1%) or Internet cafe (.7%). Overall, however, nearly 35% of respondents indicated that they did not use any public access locations.

However, people with a high school education or less made use of public access points significantly more than the regional average, and had substantially less access through their workplace. Their usage points were as follows: office or work (28%); school (16%); public library (8%); family member or friend's house (7%). See Table 10.

Table 10

Place of Access by Education Level, San Diego, 2004

Reason	*High School/ GED or less*	*Some College*	*College Graduate*	*Post Graduate Degree*	*Overall: San Diego*
Work/ Office/ Business	27.8%	43.5%	60.8%	61.6%	48.9%
School	16.3%	11.8%	4.9%	8.6%	10.6%
Public Library	4.8%	6.7%	4.8%	6.7%	6.9%
Community Center	0.2%	1.3%	0.0%	1.7%	0.7%
Family Member/ Friend's home	7.0%	5.3%	2.7%	1.8%	4.4%
Church	0.0%	0.0%	0.5%	0.0%	0.1%
Internet Café	1.1%	0.3%	0.3%	1.7%	0.7%
Other	1.8%	3.4%	2.0%	3.1%	2.5%
No Access outside of home	*43.3%*	*36.3%*	*31.6%*	*25.2%*	*34.8%*

Desire to Increase Computer or Internet Use

In general, lower education levels expressed an increased desire to use computers or the Internet. But the mid-level educational groups had higher than average interest in more computer use. Those at the high school level said "yes" to more usage at 34% and "no" at only 66%. 25% of those with some college desired to increase computer usage. The percentages were well above average for those with higher levels of education, who indicated no desire to increase their usage of computers. See Figure 31.

Regarding usage of the Internet, 23% of respondents expressed an interest in more use of the Internet while 76% expressed the negative. Those with a high school, GED or lower levels of education indicated a desire for more Internet usage in 30% of respondents. Those with some college education expressed an interest in more Internet use in 29% of the responses. As with computer usage patterns, those at the higher educational levels were decreasingly interested in more Internet use and were well above the average in their responses. See Figure 32.

Differences in Uses Across Education Levels

When respondents ranked their use of the Internet, there were some interesting parallels across education divisions as well as some striking differences. Following, in Table 11, are the top 5 Internet uses identified, sorted by education levels. Table 12 shows the complete result of this query.

Figure 28

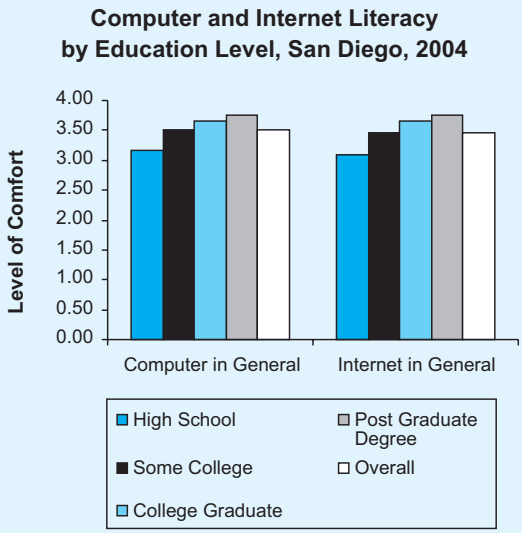
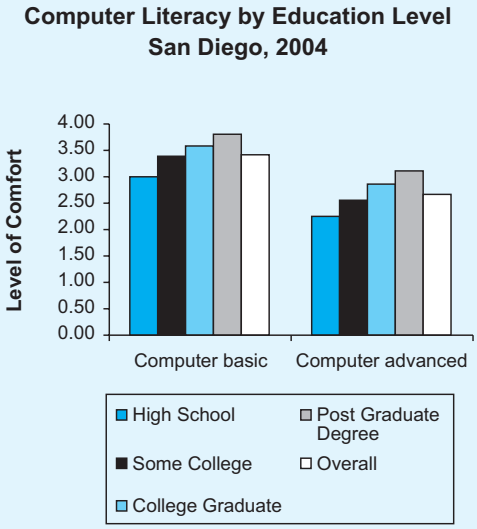


Figure 29



Legend: Comfort Level	
Measure:	*Value:*
No Experience	*+0*
Very Uncomfortable	*+1*
Somewhat Uncomfortable	*+2*
Somewhat Comfortable	*+3*
Very Comfortable	*+4*

Figure 27

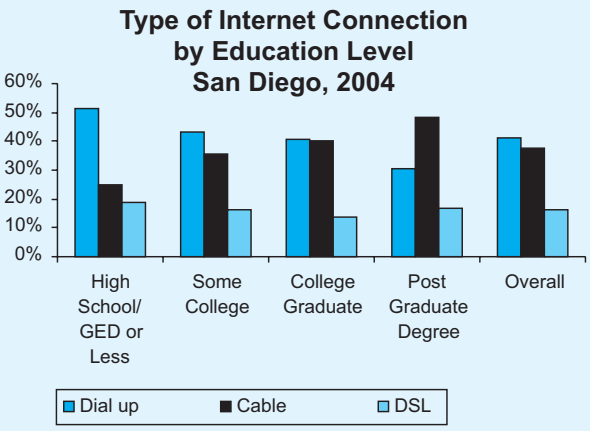
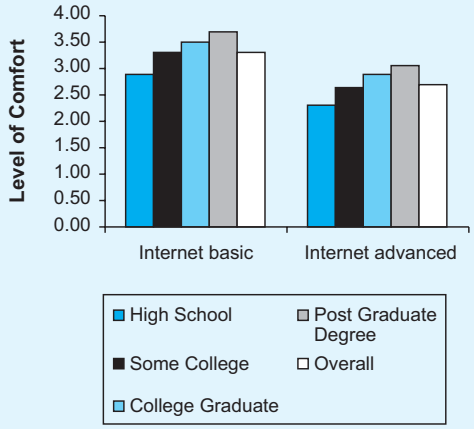


Figure 30

Internet Literacy by Education Level
San Diego, 2004



Legend: Comfort Level	
Measure:	*Value:*
No Experience	*+0*
Very Uncomfortable	*+1*
Somewhat Uncomfortable	*+2*
Somewhat Comfortable	*+3*
Very Comfortable	*+4*

Figure 31

Desire to Use Computer More by Education Level
San Diego, 2004

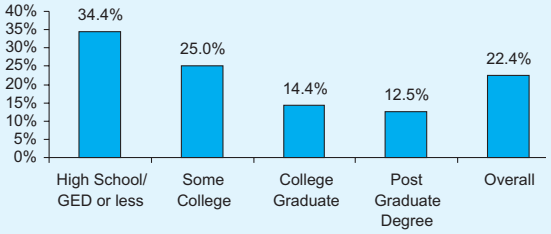


Figure 32

Desire to Use Internet More by Education Level
San Diego, 2004

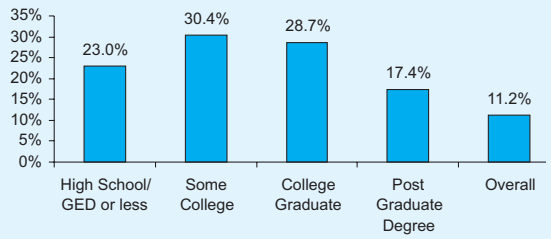


Table 11

Rankings of Internet Uses by Education Level	
High School/GED or less	
1.	email
2.	hobbies/interest info
3.	product/service info
4.	health/medical info
5.	law/policy info
Some College	
1.	email
2.	hobbies/interest info
3.	education
4.	travel info
5.	product/service info
College Graduate	
1.	email
2.	travel info
3.	education info
4.	hobbies/interest info & work related tasks (tie for 4th)
5.	product/service info
Post Graduate Degree	
1.	email
2.	travel info
3.	work related tasks
4.	product/service info
5.	education

Table 12

Priority of Tasks by Education Level San Diego, 2004				
Statement	*White*	*Latino*	*African American*	*Asian/Pacific Islander*
Email	1.22	1.47	1.60	1.76
Online chatting	-.029	-0.20	-0.40	-0.40
Getting health or medical information	0.58	0.65	0.49	0.63
Managing finances	0.39	0.40	0.57	0.58
Keeping up to date on current events	0.50	0.59	0.74	0.68
Entertainment or sports	0.40	0.25	0.24	0.00
Start or maintain your own business	0.04	-0.19	-0.11	-0.02
Create graphics	0.22	0.31	0.22	0.31
Gather information about products/services	0.72	0.79	0.81	1.00
Purchase products or services	0.86	0.24	0.43	0.72
Search for jobs or training	0.19	0.27	0.24	0.26
Do work related tasks	0.81	0.60	0.84	1.20
Gather information about personal hobbies/interests	0.90	0.92	0.84	0.88
Find information about laws/ policies that affect you	0.56	0.45	0.46	0.42
Travel information/ arrangements	0.55	0.82	1.21	1.30
Educational purposes or homework	0.18	0.84	0.88	0.94
Participate in or learn about community activities	0.28	0.19	0.26	0.35
Participate in or learn about political activities	0.11	0.01	0.11	0.32

Legend: Importance	
Measure:	*Value:*
Not at all Important	*+0*
Somewhat Important	*+1*
Very Important	*+2*

Impact on Life

The majority of survey respondents overall reported that computers had a very positive (55%) or somewhat positive (30%) impact on their lives. 11% reported no impact, and negative responses were a small percentage. 2% felt the impact was somewhat negative, 1% cited a very negative impact and 1% declined to respond. However, the degree of positive impact tracked very closely with rising levels of education. See Table 13.

Table 13

Computer Impact on Life by Education Level, San Diego, 2004

Impact	*High School*	*Some college*	*College graduate*	*Post Graduate Degree*
Positive	75.73%	84.41%	90.64%	95.91%
Negative	4.18%	3.73%	1.87%	0.58%
No Impact	20.08%	11.86%	7.49%	3.51%

Potential Rationales for the Education Divide

Reasons for not Owning a Computer

As cited earlier, 81% of all households in the region had a computer, with ownership clearly following education levels, pointing to a continuing disparity between those with lower and higher levels of education. Since cost was a leading reason cited at the lower income levels for lack of ownership, we again have to consider the probable correlation between income and education when reviewing these findings.

Based on mean scores, cost was the number one reason for lack of computer ownership by those with educational levels of high school or lower (1.21). Cost was the number two reason cited by those with some college (1.08). At the high school level, the second most common reason cited was a lack of knowing how to use a computer, with a mean score of .94. This issue was modest for those with some college (.66, or fourth of seven reasons), and was the sixth of seven reasons cited for college graduates and the last concern for those with advanced degrees. Access outside of the home and lack of time to use a computer were also reasons cited as significant at all education levels. See Table 14.

Table 14

Reasons for Not Owning a Computer by Education Level, San Diego 2004

Reason	*High School/ GED or less*	*Some College*	*College Graduate*	*Post Graduate Degree*
Computers are too expensive	1.21	0.92	1.10	0.92
Have access to computer outside the home	0.84	1.08	1.37	1.31
I don't have enough time to use a computer	0.81	0.72	0.73	1.08
Don't know how to use a computer	0.94	0.66	0.50	0.38
I don't know what I would use a computer for	0.84	0.64	0.67	0.00
I don't want my children to have computer access at home	0.63	0.45	0.63	0.00
Learning how to use a computer is too difficult	0.62	0.58	0.43	0.46

Reasons for Not Using Public Access Points

The leading reason cited by respondents overall for not making use of public computing access was that they had sufficient access elsewhere (21%), location or inconvenient hours (10% each). Other reasons cited that had much smaller responses included: not knowing it was available (2%); the wait is too long (2%); safety, security or privacy concerns (2%); don't know how to use computers (1%); other (3%), and inaccessible for people with disabilities (.9%).

Table 15

Reasons for Not Using Computer/ Internet at a Library or Community Center San Diego, 2004

Reason	*High School/ GED or less*	*Some College*	*College Graduate*	*Post Graduate Degree*
Location	11.7%	6.4%	10.7%	14.5%
Inconvenient hours	13.2%	11.3%	9.3%	6.9%
Did not know it was available	3.6%	1.5%	2.1%	1.1%
Don't know how to use it	3.3%	0.9%	1.0%	0.8%
Have sufficient access elsewhere	20.5%	17.8%	20.4%	24.5%
The wait is too long	3.4%	4.2%	0.5%	0.0%
Safety/security/ privacy concerns	1.4%	3.7%	0.0%	1.4%
Inaccessible for people with disabilities	1.7%	1.0%	0.0%	1.4%
Other	5.0%	1.9%	2.9%	0.5%

Attitudes Toward Computers

Survey respondents were asked about their attitudes towards computers, and clearly attitudes differed between those in the lower educational brackets and those with advanced education. Survey respondents were asked four questions, to which they could respond "strongly agree," "agree somewhat," "disagree somewhat," "strongly disagree," and "don't know." Answers were coded as follows:

Strongly agree	+4
Agree somewhat	+3
Disagree somewhat	+2
Strongly disagree	+1
Don't know	0

Responses were aggregated to determine the average or "mean" score for each task. A higher mean score (closer to 4) indicates a higher level of agreement, whereas a lower mean score (closer to 1) indicates a lower level of agreement.

When asked whether we rely too much on technology and science, the less educated population responded in the affirmative to a far greater degree (.64) than for those with some college experience (.33). College graduates (.06) and post graduates (-.22) clearly indicated by their responses that this was not an issue of concern to them.

Respondents were asked whether most of the people they knew did not use a computer. This question elicited a response that exactly tracked levels of education. The lower the education level, the lesser the disagreement (i.e. most people they knew did own a computer, but to a lesser degree than those with more education), but in general this was not a significant issue.

This same trend appeared in response to the statement, "modern technology, and in particular computers, presents a real threat to our privacy and freedom." The mean scores descended as education levels rose, with, again, a dramatic difference between those with only high school education and with any college experience. Mean scores for this response were as follows: high school of GED (.19); some college (.30); college graduates (.10); post graduates (-.28).

However, when asked whether they felt it was important for school-aged children to learn how to use a computer, the responses were very similar across all education levels. Mean scores ranged from 1.73 (high school or lower) to 1.75 (post graduate level). Clearly on that matter there is consensus regardless of educational or financial status. See Table 16.

Table 16

Level of Agreement With Statements by Education Level San Diego, 2004

Statement	*High School/ GED or less*	*Some College*	*College Graduate*	*Post Graduate Degree*
We have come to rely too heavily on technology and science	0.70	0.31	-0.49	-0.22
Most people I know do not use computers	-0.88	-1.09	-1.38	-1.42
Technology is a threat to privacy and freedom	0.22	0.29	0.11	0.03
It is important for school aged children to know how to use computers	1.69	1.79	1.83	1.74

Legend: Level of Agreement with Statements

Measure:	*Value:*
Strongly Disagree	*-2*
Disagree Somewhat	*-1*
Agree Somewhat	*+1*
Strongly Agree	*+2*

Figure 33

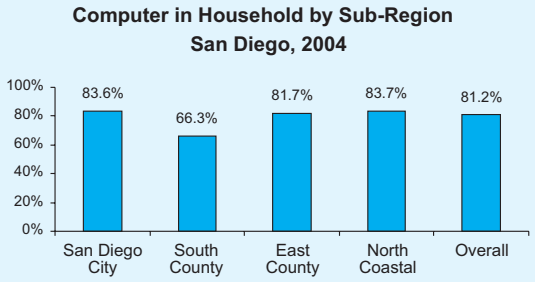


Figure 34

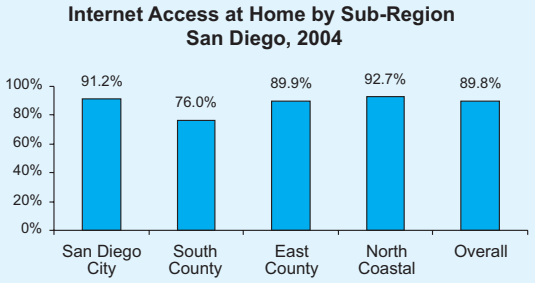
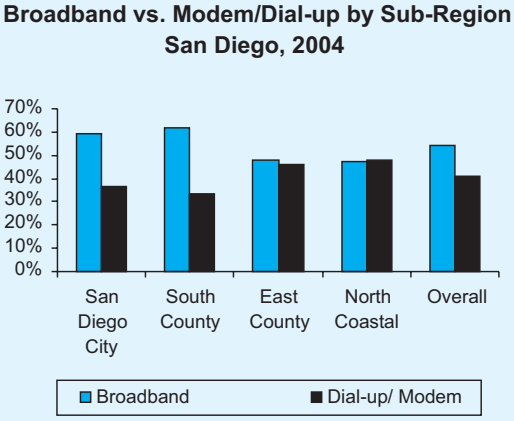


Figure 35



Geography

In 2000, geographical findings closely mirrored economic and ethnic characteristics. To the extent that San Diego has concentrations of ethnic communities and lower income neighborhoods, the disparity reflected by zip codes closely resembled economic and ethnic issues overall.

For the purposes of this analysis, geographical sub-regions defined within this study include the following areas:

- *San Diego City: entire San Diego city limits*
- *North Coastal: Del Mar, Solana Beach, Encinitas, Carlsbad, Oceanside*
- *East County: San Marcos, Escondido, Santee, El Cajon, La Mesa, Lemon Grove*
- *South County: Coronado, National City, Imperial Beach, Chula Vista*

Extent of the Geographic Divide

Computer Ownership

In 2004, geographical disparity in computer ownership is apparent. South County residents have a considerably lower rate of home computer ownership (66%) than other sub-regions in the San Diego region. This disparity represents a 15 percentage point difference from the average for all sub-regions. The other three sub-regions, San Diego City, East County, and North Coastal have relatively similar home computer ownership rates. See Figure 33.

Internet Access and Type of Connection

A divide exists between South County residents, who have a lower rate of Internet access (76%), and residents from the rest of the region. This geographic divide does not appear to be as pronounced as the geographic divide witnessed with computer ownership, but is important nonetheless. See Figure 34.

When examining type of connection, however, the results are surprising. As seen in Figure 35, South County residents have the highest rate of broadband connections of any sub-region (62%), and are almost twice as likely to have broadband connections than modem/dial-up connections.

Computer Literacy as Measured by Comfort with Specific Tasks

A geographic divide is also apparent when examining computer and Internet literacy levels. Mean scores are employed when examining computer literacy. Survey respondents were asked about their comfort level with specific computer or Internet-related tasks, to which they could respond "very comfortable," "somewhat comfortable," "somewhat uncomfortable," "very uncomfortable," and "no experience."

Answers were coded as follows:

Very comfortable	+4
Somewhat comfortable	+3
Somewhat uncomfortable	+2
Very uncomfortable	+1
No experience	0

Responses were aggregated to determine the average or "mean" score for each task. A higher mean score (closer to 4) indicates a higher level of literacy, whereas a lower mean score (closer to 1) indicates a lower level of literacy.

South County residents have the lowest levels of comfort with both computers and the Internet in general (mean scores of 3.33 and 3.28) of all sub-regions. East County residents have lower levels of comfort as well (3.40 for computers and 3.32 for Internet). The San Diego City and North Coastal sub-regions have the highest levels of comfort with computers and the Internet in general. See Figure 36.

The same patterns are witnessed with computer and Internet literacy, as seen in Figures 37 and 38.

Impact of the Geographic Divide

San Diegans were asked about where they use the computer outside of the home. Work and no access outside of the home were the most prevalent answers in all sub-regions, followed by school, and public libraries or community centers. South County residents are the most likely residents in the region to use computers at school (13%) and public libraries (8%). See Figure 39.

Desire to Increase Computer or Internet Use

The majority of residents in all sub-regions responded that they would not like to use a computer or the Internet more than they currently do. Among those respondents that would like to use computers and the Internet more than they currently do, South County residents had the highest representation of all sub-regions, followed by North Coastal residents. See Figure 40.

Figure 36

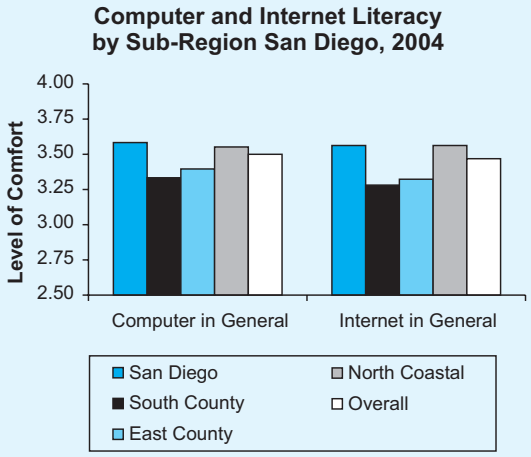
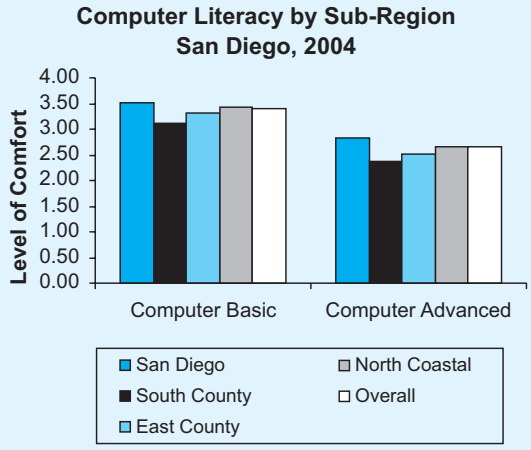


Figure 37



Legend: Comfort Level	
Measure:	*Value:*
No Experience	*+0*
Very Uncomfortable	*+1*
Somewhat Uncomfortable	*+2*
Somewhat Comfortable	*+3*
Very Comfortable	*+4*

Table 17

Priority of Tasks by Sub-Region, San Diego, 2004

Task:	*San Diego City*	*South County*	*East County*	*North Coastal*	*Overall*
E-mail	1.65	1.55	1.57	1.67	1.62
Educational purposes or homework	1.37	1.57	1.21	1.18	1.31
Do work related tasks	1.28	1.40	1.05	1.34	1.25
Travel information/ arrangements	1.29	1.19	1.10	1.24	1.22
Gather information about products and services	1.17	1.17	1.02	1.12	1.12
Gather information about hobbies/ personal interests	1.19	1.10	1.10	1.02	1.12
Getting health or medical information	0.99	1.27	0.91	0.96	0.99
Managing your finances	0.99	1.19	0.85	1.02	0.98
Keeping up to date on current events	1.07	1.02	0.85	0.95	0.98
Purchase products or services	0.99	0.98	0.90	0.92	0.95
Find information about laws/policies that affect you	0.94	1.10	0.92	0.89	0.94
Search for jobs or training	0.91	1.00	0.72	0.81	0.84
Create graphics	0.81	0.92	0.77	0.87	0.82
Entertainment or sports	0.87	0.81	0.62	0.70	0.77
Participate in or learn about community activities	0.81	0.89	0.69	0.71	0.77
Start or maintain your own business	0.66	0.90	0.53	0.89	0.70
Participate in or learn about political activities	0.73	0.76	0.61	0.66	0.69
Online chatting	0.52	0.56	0.42	0.37	0.47

Legend: Importance

Measure:	*Value:*
Not at all Important	*+0*
Somewhat Important	*+1*
Very Important	*+2*

Differences in Uses Across Sub-regions

Across all sub-regions, the most popular computer uses were:

- E-mail
- Education purposes or homework
- Work-related tasks
- Travel information or arrangements

There appears to be a trend whereby there is minimal variation in the degree of importance for certain tasks among all sub-regions with the exception of South County. There are a number of tasks that South County residents feel strongly about using the computer to perform as compared to the other three sub-regions, such as getting health or medical information, managing finances, and finding information about laws affecting them. See Table 17.

As seen in Table 17, South County residents appear to feel more strongly about computer-related tasks in general as compared to residents from other sub-regions. This enthusiasm for using the computer as a tool is understandable when considering that South County residents expressed the most desire to use a computer more than they currently do as compared with the other sub-regions.

Impact on Life

There is little variation among residents in San Diego's sub-regions with regard to perceptions about how computers and Internet have impacted their lives. As seen in Figure 41, residents in San Diego City and North Coastal sub-regions tend to believe that computers and the Internet have had a more positive impact on their lives as compared to residents in the South County and East County regions.

Figure 39

Locations for Computer Use Outside the Home by Sub-Region San Diego, 2004

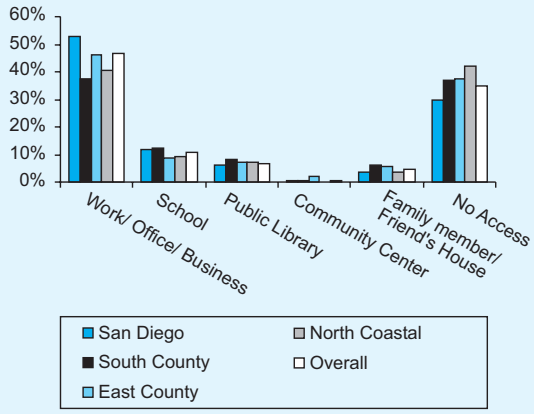


Figure 40

Desire to Use Computers and the Internet more by Sub-Region San Diego, 2004

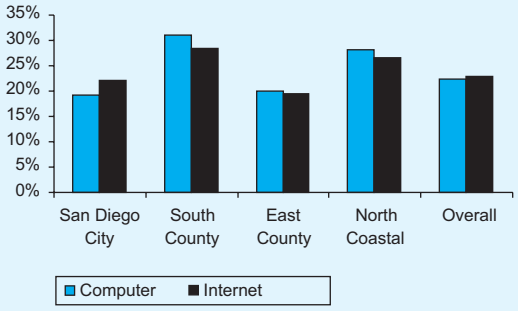
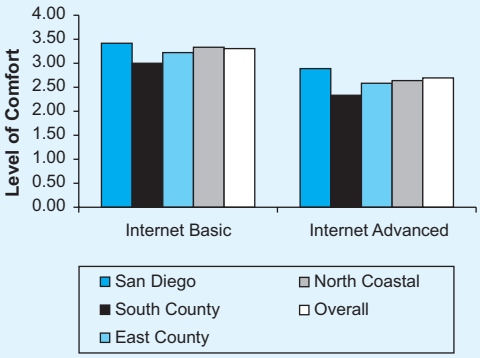


Figure 38

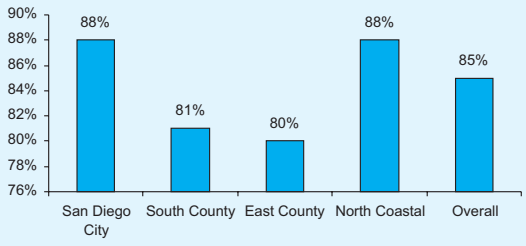
Internet Literacy by Sub-Region San Diego, 2004



Legend: Comfort Level	
Measure:	*Value:*
No Experience	*+0*
Very Uncomfortable	*+1*
Somewhat Uncomfortable	*+2*
Somewhat Comfortable	*+3*
Very Comfortable	*+4*

Figure 41

Positive Impact of Computers and the Internet on Life by Sub-Region San Diego, 2004



Potential Rationales for the Geographic Divide

Reasons for Not Owning a Computer

Cost is the most important reason for not owning a computer in all sub-regions except North Coastal, where the main reason is existing outside access. Residents in North Coastal and South County sub-regions reported "not knowing how to use a computer" and "not enough time" as somewhat important reasons for not owning a computer, and South County residents reported that the difficulty of learning how to use a computer was an important reason as compared to other sub-regions as well. See Table 18.

Table 18

Reasons for Not Owning a Computer by Sub-Region, San Diego 2004

	Overall	*San Diego*	*South County*	*East County*	*North Coastal*
Cost	1.10	1.10	1.24	1.02	1.06
Existing Outside Access	1.02	1.10	1.14	0.75	1.13
Don't Know How to Use	0.77	0.73	0.89	0.54	1.03
Learning How to Use is Difficult	0.59	0.63	0.83	0.40	0.55
Not Enough Time	0.80	0.70	0.97	0.73	0.94
Don't Know What I Would Use it For	0.73	0.77	0.63	0.66	0.91
Don't Want Children to Have Home Access	0.60	0.56	0.50	0.43	1.00

Legend: Importance

Measure:	*Value:*
Not at all Important	*+0*
Somewhat Important	*+1*
Very Important	*+2*

Attitudes Towards Computers

An examination of San Diegans' attitudes regarding computers and technology may help explain lower rates of computer ownership among South County residents. For most statements, there was minimal variation among responses from all of the sub-regions except South County. In particular, South County residents felt more strongly than residents in other sub-regions that we have come to rely too much on technology and science, and that modern technology presents a threat to privacy and freedom. In addition, South County residents ultimately disagreed with the statement "most people I know do not use computers," but they disagreed with this statement to a lesser extent (0.84) than residents in other sub-regions. It may be that one of the challenges to closing the digital divide will be to offer South County residents more compelling reasons- or more perceived benefits- for incorporating modern technology into their lives.
See Table 19.

Table 19

Agreement with Statements by Region, San Diego, 2004

Statement	*San Diego City*	*South County*	*East County*	*North Coastal*	*Overall*
We have come to rely too much on technology and science	0.16	0.74	0.18	0.24	0.24
Most people I know do not use computers	-1.17	-1.27	-0.84	-1.02	-1.35
Modern technology presents a threat to privacy and freedom	0.18	0.10	0.41	0.25	0.12
It is important for school age children to know how to use computers	1.76	1.79	1.65	1.76	1.76

Legend: Importance

Measure:	*Value:*
Not at all Important	*+0*
Somewhat Important	*+1*
Very Important	*+2*

Other Factors

Age and employment status, although certainly important issues in examining the extent of the digital divide as it continues to exist, are somewhat subsets of other factors which have been given a more detailed analysis. An abbreviated discussion of these two additional factors is offered here.

Age

In 2000, the digital divide was most pronounced in our senior population and for children in single-parent households.

- *While computer ownership in people aged 35-44 was 84%, ownership by those over 65 years of age was only 52%, with most citing a lack of computer knowledge as their rationale.*
- *The impact on our community's youth was significant for children in single-parent house holds, where computer ownership was a full 20 percentage points below two-parent families with children.*

Extent of the Age Divide

Computer Ownership

As previously noted, 81% of all households in the region currently own a computer. The distribution by ages, however, is somewhat uneven and may really be a reflection of income levels or economic achievement in the mid ranges. The largest percentage of computer owners are ages 45-54 (90%), followed by ages 35-44 (88%), ages 18-24 (80%), ages 55-64 (83%), and ages 25-34 (77%). As in the previous study, senior citizens, aged 65 and over, were least likely to own a computer, at 70%. See Figure 42.

Internet Access and Type

Home Internet access followed a similarly random pattern in the mid-level ages, but the top and bottom responses for home Internet access mirrored computer ownership percentages. Those respondents aged 45-54 were number one in Internet access (95%) as well as in computer ownership. 25-34 year olds and seniors over 65 were in the lowest percentages of Internet access (87% and 79% respectively) as they were with home computers. In Internet access, those aged 55-64 and the 35-44 year olds were at the same access level (93%), and the 18-24 year olds reported home Internet access at 90%. Since all age groups, with the exception of seniors, were very close to the overall average of 90%, it is likely that the age divide is mostly now primarily a concern for our elderly population. Unfortunately, this is a population whose quality of life might be greatly enhanced by improved communication and access to information. See Figure 43.

Computer Literacy as Measured by Comfort with Specific Tasks

Survey respondents were asked about their comfort level with specific computer or Internet-related tasks, to which they could respond "very comfortable," "somewhat comfortable," "somewhat uncomfortable," "very uncomfortable," and "no experience."

Answers were coded as follows:

Very comfortable	+4
Somewhat comfortable	+3
Somewhat uncomfortable	+2
Very uncomfortable	+1
No experience	0

Responses were aggregated to determine the average or "mean" score for each task. A higher mean score (closer to 4) indicates a higher level of literacy, whereas a lower mean score (closer to 1) indicates a lower level of literacy.

The results, when tallied by age groups, were as follows:

- Respondents from 18 to 55 years of age feel more comfortable using computers than the average respondents (3.50).
- Respondents who are 55 years old and above feel less comfortable using computers in general than the overall population.
- Respondents from the ages of 18 to 44 feel more comfortable using the Internet than computers.
- Respondents between the ages of 45 to 54 are as comfortable using computers as they are using the Internet (3.55).
- Respondents who are 55 years old and older feel less comfortable using the Internet in general than the overall population (3.47). See Figure 44.

When the queries involved issues of basic versus more advanced computer skills, the responses by age were not significantly different, as follows:

- All respondents, regardless of their ages, feel more comfortable with computer basic tasks than they are with computer advanced tasks.
- Respondents between the ages of 18 and 54 have a higher level of comfort regarding computer basic tasks than the average (3.41).
- Respondents between the ages of 55 and older have a lower level of comfort regarding computer basic tasks than average (3.41).
- Respondents between the ages of 18 and 54 have a higher level of comfort regarding computer advanced tasks than the aver age (2.66).
- Respondents between the ages of 55 and older have a lower level of comfort regarding computer basic tasks than average (2.66).
- Finally, respondents who are older than 65 years old have a much lower level of comfort than average (3.41 vs 2.66) for both computer basic tasks (2.38) and computer advanced tasks (1.57). See Figure 45.

Figure 42

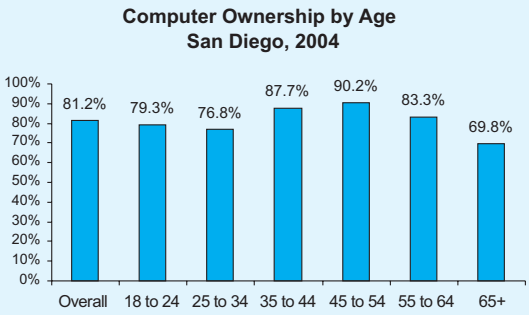


Figure 43

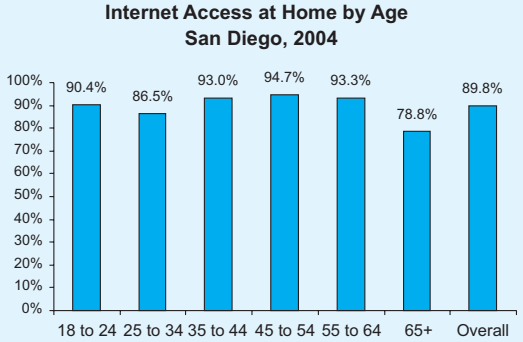
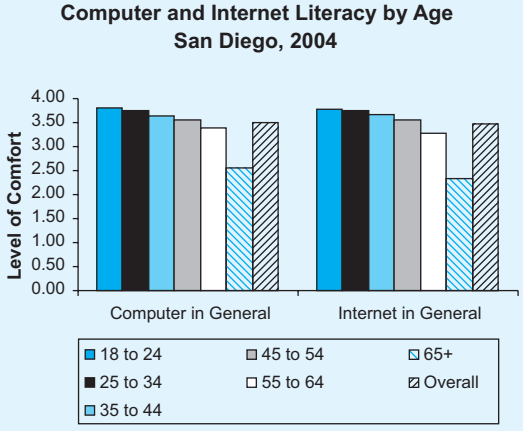


Figure 44



Legend: Comfort Level	
Measure:	*Value:*
No Experience	*+0*
Very Uncomfortable	*+1*
Somewhat Uncomfortable	*+2*
Somewhat Comfortable	*+3*
Very Comfortable	*+4*

Figure 45

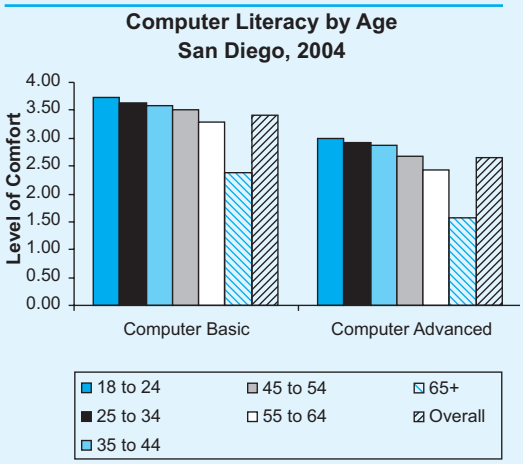
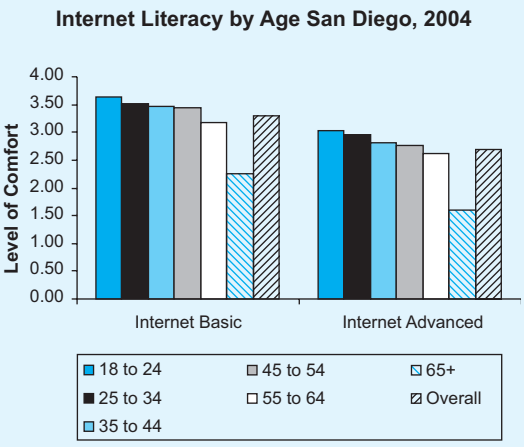


Figure 46



Legend: Comfort Level	
Measure:	*Value:*
No Experience	*+0*
Very Uncomfortable	*+1*
Somewhat Uncomfortable	*+2*
Somewhat Comfortable	*+3*
Very Comfortable	*+4*

When the query focused on Internet literacy, again, the responses among the age groups were fairly consistent with computer literacy skills:

- All respondents, regardless of their ages, feel more comfortable with Internet basic tasks than they are with Internet advanced tasks.
- Respondents between the ages of 18 and 54 have a higher level of comfort regarding Internet basic tasks than the average (3.30).
- Respondents between the ages of 55 and older have a lower level of comfort regarding Internet basic tasks than average (3.30).
- Respondents between the ages of 18 and 54 have a higher level of comfort regarding Internet advanced tasks than the average (2.66).
- Respondents betw een the ages of 55 and older have a lower level of comfort regarding Internet basic tasks than average (2.70).
- Respondents who are older than 65 years old have a much lower level of comfort than average (3.30 vs 2.70) for both Internet basic tasks (2.24) and computer advanced tasks (1.60). See Figure 46.

Impact of the Age Divide

In addition to issues of basic ownership, access and literacy, the following findings seemed to be important in considering the continuing existence of a digital divide relative to age.

When asked for their rationale for not owning a home computer, cost and access to a computer outside of home were the most important reasons given by respondents of all age groups with the exceptions of the 35 to 44 and 65 and older age groups. For the 35 to 44 age group, outside access was the most important factor. For the 65 and older age group, lack of time was the most important reason for not owning a computer, followed by not having reasons to use a one. Respondents up to age 64 were most likely to have broadband connections, whereas respondents aged 65 and older were more likely to use a modem or dial-up connection.

18 to 24 year olds were the only age group for which public libraries and community centers were most likely to be used as locations for computer and Internet access outside the home. Respondents aged 65 and older were the most likely group to report lacking access to computers or the Internet outside of the home.

The majority of respondents (77%) to the survey as a whole would not like to use a computer more than they currently do. However, 18 to 24 year olds were among those who expressed an increased desire for

computer use, as were single parent family respondents with children under 18. And although the majority of respondents (76%) would not like to use the Internet more than they currently do, respondents aged 35 or younger responded that they would desire additional Internet use.

Differences in Uses Across Age

When respondents ranked their use of the Internet, there were some interesting parallels across age groups as well as some striking differences. Following, in Table 20, are the top 5 Internet uses identified, sorted by age.

For those aged 65 and up, the mean scores were low relative to all other groups for every category. Finally, respondents aged 45 or younger were most likely to indicate that computers have had a positive impact on their lives.

Table 20

Rankings of Uses by Age, San Diego, 2004

18-24	
1.	email
2.	education
3.	hobbies/interest info
4.	travel info
5.	product/service info
25-34	
1.	email
2.	education
3.	travel info
4.	work related
5.	hobbies/interest info
35-44	
1.	email
2.	education
3.	travel info
4.	work related
5.	product/service info
45-54	
1.	email
2.	travel info
3.	work related
4.	product/service info
5.	hobbies/interest info
55-64	
1.	email
2.	product/service info
3.	hobbies/interest info & travel info (tie for 3rd)
4.	work related
5.	health/medical info
65+	
1.	email
2.	travel
3.	health/medical info
4.	product/service info
5.	managing finances

Employment Status

In 2000, although it was not the most important factor affecting the digital divide, the proportions of computer ownership for those people who were employed full-time was generally higher than for non full-time workers.

- *Full-time employees owning a home computer had significantly higher rates of home Internet usage.*
- *Individuals over 50 years of age were nearly three times more likely to use the Internet if they were still in the workforce.*

Extent of the Employment Divide

Computer Ownership and Internet Access

The survey conducted for this updated study offered a choice of 25 occupations with which respondents could identify themselves, but the largest percentage were employed in occupations other than those identified (29%). Relative to all occupations, the respondents were employed full time (55%), part time (13%), students or homemakers (6% each), unemployed (4%), retired (13%) and declined to state their employment (2%). The largest percentage of respondents having access to a computer and the Internet reported that they used the technology at work (47%). In addition to the workplace being the largest single usage site, respondents who chose not to make use of libraries or other public access points indicated that they had sufficient access elsewhere. This response was uniformly consistent when examined by age, education, income and ethnicity.

Computer Literacy as Measured by Comfort with Tasks

Where the issue of an employment divide becomes relevant, however, is when levels of computer and Internet literacy, both basic and advanced, are examined relative to the type of work people perform. By mean scores reported respondents who are full-time employed (3.75), part-time employed (3.62) or students (3.75) appear to be more comfortable using computers in general than the average respondents (3.50). Respondents who are homemakers (3.09), unemployed (3.30) and retired (2.60) seem to be less comfortable with the use of computers in general. By mean scores reported, respondents who are full-time employed (3.73), part-time employed (3.52) or students (3.87) appear to be more comfortable using the Internet in general than the average respondents (3.47).

Again, respondents who are homemakers (3.14), unemployed (3.43) and retired (2.31) seem to be less comfortable with the use of the Internet in general than average. Students, unemployed and homemakers are the only categories that seem to be more comfortable using the Internet than using a computer for general use. See Figure 47.

With regard to general computer literacy, all respondents, regardless of their employment status, appear to be more comfortable with computer basic tasks than with computer advanced tasks. According to mean scores, respondents who are full-time employed (3.65), part-time employed (3.48) or students (3.82) appear to be more comfortable with computer basic tasks than the average respondents (3.41). Consistent with the employment trends, respondents who are homemakers (3.06), unemployed (3.19) and retired (2.42) seem to be less comfortable with computer basic tasks than the average. Respondents who are full-time employed (3.01), part-time employed (2.42) or students (3.00) appear to be more comfortable using computer advanced tasks than the average respondents (2.66). Respondents who are homemakers (1.99), unemployed (2.56) and retired (1.62) seem to be less comfortable with computer advanced tasks than average. See Figure 48.

With regard to Internet literacy by employment, all respondents, regardless of their employment status, appear to be more comfortable with Internet basic tasks than with Internet advanced tasks. Respondents who are full-time employed (3.58), part-time employed (3.30) or students (3.66) appear to be more comfortable with Internet basic tasks than the average respondents (3.30). Respondents who are homemakers (2.92), unemployed (3.22) and retired (2.30) seem to be less comfortable with Internet basic tasks than the average. Respondents who are full-time employed (3.00), part-time employed (2.39) or students (3.08) appear to be more comfortable with Internet advanced tasks than the average respondents (2.70). Respondents who are homemakers (2.28), unemployed (2.64) and retired (1.72) seem to be less comfortable with Internet advanced tasks than average. See Figure 49.

Figure 47

Computer and Internet Literacy by Employment
San Diego, 2004

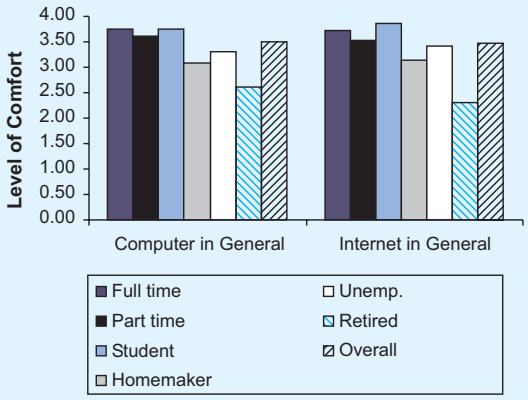


Figure 48

Computer Literacy by Employment
San Diego, 2004

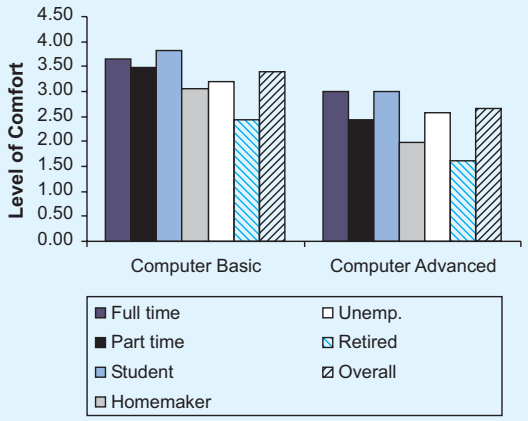
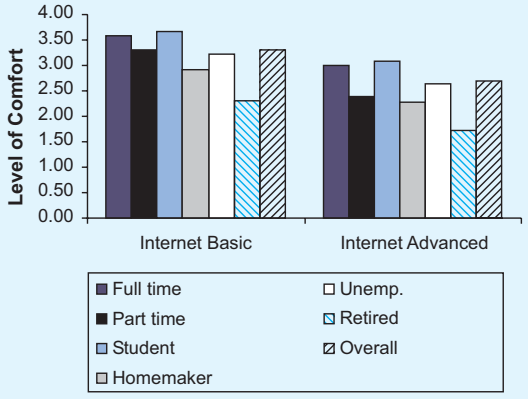


Figure 49

Internet Literacy by Employment
San Diego, 2004

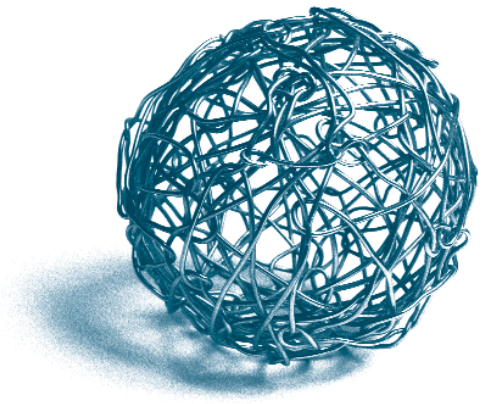


Recommendations

Encourage and support community technology programs in South County.
CTCs located in South County (which includes the cities of National City, Imperial Beach, Chula Vista and the neighborhood of San Ysidro) are few and far between. The lack of CTCs combined with lower computer ownership, Internet access, and computer literacy rates as compared with other San Diego sub-regions presents a compelling opportunity for existing community based organizations, local government and funders to collaborate to increase the number of community technology programs available to South County residents.

Coordinate outreach efforts to make San Diegans aware of the opportunities for computer access and training that are available to them.
A variety of opportunities exist for San Diego residents who would like to increase their computer and Internet literacy skills. Although there are 161 CTCs in the region, only 7% of the population has made use of the technology programs available to them. Building community awareness of CTCs may be an appropriate activity that can be incorporated with existing outreach being done by libraries, local governments, or workforce development intermediaries that catalog education and training providers in general.

Continue to promote and support computer ownership and broadband Internet access.
Cost still remains a barrier for most San Diego residents who do not own computers at home. An increasing number of CTCs in San Diego are implementing programs whereby their constituents can receive free or low-cost computers, together with training. These efforts are aided by grant funding, computer donations from industry and organizations involved in computer refurbishing such as the San Diego Futures Foundation. Creative solutions such as these should be explored and encouraged by local governments, funders, and community based organizations.



Methodology

On behalf of the RTA, Godbe Research and Analysis conducted a comprehensive survey of 1,000 San Diego County residents. The survey was designed by the RTA and Godbe Research and Analysis, and was based on the survey used in the RTA's 2001 digital divide study, *Mapping a Future for Digital Connections, a Study of the Digital Divide in San Diego County.* The survey instrument from the RTA's 2001 digital divide study was modeled upon the survey conducted by the U.S. Department of Commerce's National Telecommunications and Information Administration, which has performed four studies of the digital divide nationally. In designing the 2004 survey, the RTA borrowed from the City of Seattle's *Information Technology Indicators Residential Survey,* released in May 2002.

Godbe Research and Analysis conducted 1,000 telephone interviews among San Diego County residents 18 years of age or older, representing a universe of 2,200,000 residents. Interviews were conducted from November 25 through December 4, 2003.

Once collected, the survey data were compared with SANDAG and California Department of Finance projections based on extrapolations from Census 2000 data to examine possible differences between the sample and the population of adult residents (18 years and older) within the County of San Diego on major demographic variables. After examining the dimensions of geographic region, gender, ethnicity, and age, the data were weighted to accurately represent the target population.

For the purposes of the survey and its analysis, San Diego County was divided into four geographic sub-regions as shown below:

East County	91901 91903 91905 91906 91916 91917 91931 91934 91935 91941 91942 91943 91944 91945 91946 91948 91962 91963 91976 91977 91978 91979 92003 92004 92019 92020 92021 92022 92025 92026 92027 92028 92029 92030 92033 92036 92040 92046 92059 92060 92061 92064 92065 92066 92070 92071 92072 92074 92082 92086 92088 92090
North County Coastal	92007 92008 92009 92013 92014 92018 92023 92024 92049 92051 92052 92054 92055 92056 92057 92058 92067 92068 92069 92075 92078 92079 92083 92084 92085 92091 92096
San Diego City	92101 92102 92103 92104 92105 92106 92107 92108 92109 92110 92111 92112 92113 92114 92115 92116 92117 92118 92119 92120 92121 92122 92123 92124 92126 92127 92128 92129 92130 92131 92132 92133 92134 92136 92137 92138 92139 92140 92142 92145 92147 92149 92150 92152 92153 92154 92155 92159 92160 92161 92162 92163 92164 92165 92166 92167 92168 92169 92170 92171 92172 92173 92174 92175 92176 92177 92179 92182 92184 92186 92187 92190 92191 92192 92193 92194 92195 92196 92197 92198 92199 92037 92038 92039 92092 92093 92143 92173
South County	91902 91908 91909 91910 91911 91912 91913 91914 91915 91921 91932 91933 91947 91950 91951 91980 91987 92118 92135 92178

For analyses involving computer literacy that are included in this report, data is from survey responses to a survey question that asked if the respondent was comfortable or uncomfortable with using the computer for specific tasks, and asked to what degree he or she is comfortable or uncomfortable. In its analysis of the survey data, the RTA classified each task in one of the following literacy categories:

- Computer general
- Internet general
- Computer basic
- Computer advanced
- Internet basic
- Internet advanced

The tasks were grouped in the following way, based on tasks and classifications used in the City of Seattle's *Information Technology Indicators for a Healthy Community:*

Computer General
Using a computer in general

Internet General
Using the Internet in general

Computer Basic
Saving a file
Opening a saved file
Using a word processing program

Computer Advanced
Installing new software
Using a spreadsheet program
Creating a flyer that includes graphics
Setting up a new computer

Internet Basic
Sending an e-mail message
Replying to an e-mail message
Finding and retrieving information on the web
Downloading files from the Internet

Internet Advanced
Signing up and removing oneself from an e-mail list
Setting up a new Internet connection

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Waitt Family Foundation

The Waitt Family Foundation was established in 1993 by Ted and Joan Waitt as a vehicle for helping good people do great things. The Foundation was established in North Sioux City, South Dakota, where the Waitt's have a 100-year history of community involvement and leadership shared by Ted's father and grandfather. It was here that the Waitt family, over the course of four generations, acquired their core values of respect for family, concern for community and commitment to hard work. Since 1999, the Foundation's main office has been located in La Jolla, California.

The Foundation uses a Past - Present - Future approach to grantmaking. We believe that revealing the past helps everyone understand the context for today's challenges and opportunities and, most importantly, it gives them a say in their future. We develop partnerships and projects that find ways to tap into the potential of the human mind.

The Waitt Foundation is pleased to support the Regional Technology Alliance in developing this study. This valuable research helped drive the creation of our Tech Power program, which will increase access to technology for the residents of San Diego's South County. For more information, see our website at www.waittfoundation.org

Godbe Research and Analysis

Godbe Research, founded in 1990, is a full-service public opinion and market research agency that offers its clients extensive research experience to support public and private sector marketing and planning efforts. The firm is recognized by our superior research designs and experienced research team, as well as our reputation for producing 'innovative, accurate, and results driven research'. With offices in Half Moon Bay, Carlsbad, and Los Angeles, Godbe Research can list such notable clients as Apple Computer, EarthLink, Comcast Cable, SANDAG, The San Diego Regional Technology Alliance, Amazon.com, Southern California Association of Governments, and Microsoft.

San Diego Regional Technology Alliance

The San Diego Regional Technology Alliance (RTA) is a private non-profit corporation that promotes sustainable technology growth in the region by providing direct business assistance and networking opportunities to entrepreneurs and high tech and biotech companies, programs to bridge the digital divide, and research and education to help shape public policy and forge effective collaborations.

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